

MARINE RECORD

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OPENING OF THE NEW-AMERICAN LOCK.

The new 800-foot American lock at Sault Ste. Marie was opened at nine o'clock Monday morning, August 3, when the revenue cutter Andy Johnson, the Hancock, of Detroit, and the river and harbor tug Antelope entered the chamber, while a number of steamers assembled in the vicinity gave a hearty salute with their whistles. On the Hancock were Col. J. G. Lydecker and family, Lieut. J. B. Cavanaugh, and Miss Poe, of Detroit, and the entire corps of civil engineers connected with the construction of the lock and the adjacent surveys. About 300 citizens were on board the Johnson. The intermediate and upper gates only were used, and the lock filled in 13 minutes and emptied in eight minutes.

The new lock is 800 feet in length between the gates, by 100 feet in width, and 43 to 45 feet in depth. The depth of water over the upper sill is 22 feet, and over the lower sill 20 feet. The lift is 18 feet. The side walls are each 1,100 feet long, built of Kelley's Island limestone, transported thither from Lake Erie in the rough, and dressed there. The walls are 20 feet thick at the base, and retain this width for 10 feet in height, when, by five two-foot offsets five feet apart, they are narrowed to 10 feet in thickness. From the east end for 282 feet the walls are 45 feet high, and from that point westward 43 feet high. At either end the walls are 36 feet thick from base to top. The faces of the lock wall consist of 23 courses of stone. Part of the first course and the capping course are about 1½ feet thick, and for the intermediate courses the stones were cut 6 feet long by 3 feet wide by 2 feet in thickness. The cost to the government, for the actual work on the masonry, exclusive of all clerical help, is \$1,085,469.

In connection with the new dock is a magnificent power and office building of stone and brick, to cost about \$100,000 when finished. While the building will not be completed until late in the fall, the basement, which contains the machinery, is entirely finished. Here are installed two 30-horse-power turbines, which will drive three three-plunger single-acting high-pressure pumps that will deliver pressure to loaded accumulators, where it will be stored under a pressure of 300 to 500 pounds per square inch, ready for use, and delivered to the engines as required. The exhaust, or discharge from the engines, will be returned by means of a separate set of piping to a tank in the engine room, and used continuously. The pressure fluid is a limpid mineral oil, which will be used in both warm and cold weather.

The lock chamber can be filled or emptied in from 6 to 8 minutes. At the inaugural lockage all the valves were not in use, which accounts for the greater consumption of time. The water is let in through six culverts which run longitudinally under the lock floor, coming into the lock through the openings shown in the illustration.

The pumping machinery, which will be used for entirely emptying the new lock in case of accident, was designed by Julian Kennedy, of Pittsburg, and cost approximately \$88,000. It is also in the basement of the power-house, and consists of three centrifugal pumps, each 30 inches in diameter of discharge. These are to

be driven by three Westinghouse compound engines of 350 horse-power each. Steam for this plant is furnished by a battery of water-tube boilers, set in steel casings. It is expected that the lock can be emptied in six or seven hours. The pumps were built by the Southwark Foundry & Machine Co., Philadelphia; the engines by Church, Kerr & Co., Pittsburg; and the boilers by the Babcock & Wilcox Co., New York.

The operating plant consists of six machines, which are used in moving the gates; 12 engines for opening and closing the valves by means of which the water is let into and out of the chamber, and two hydraulic capstans, together with the pumps, accumulators and piping necessary to operate them. There is a gate machine for each leaf of the working gates, which are styled the upper, lower and intermediate gates. Each gate machine consists of two 3-cylinder, single-acting hydraulic engines on one shaft. These engines drive a 6-foot winding drum, on which the cables are wound. The drum is driven in either direction by a series of internal planet gearing. The gears are controlled by two friction brakes in such a manner as to revolve the drum in one direction when one brake is set, and the

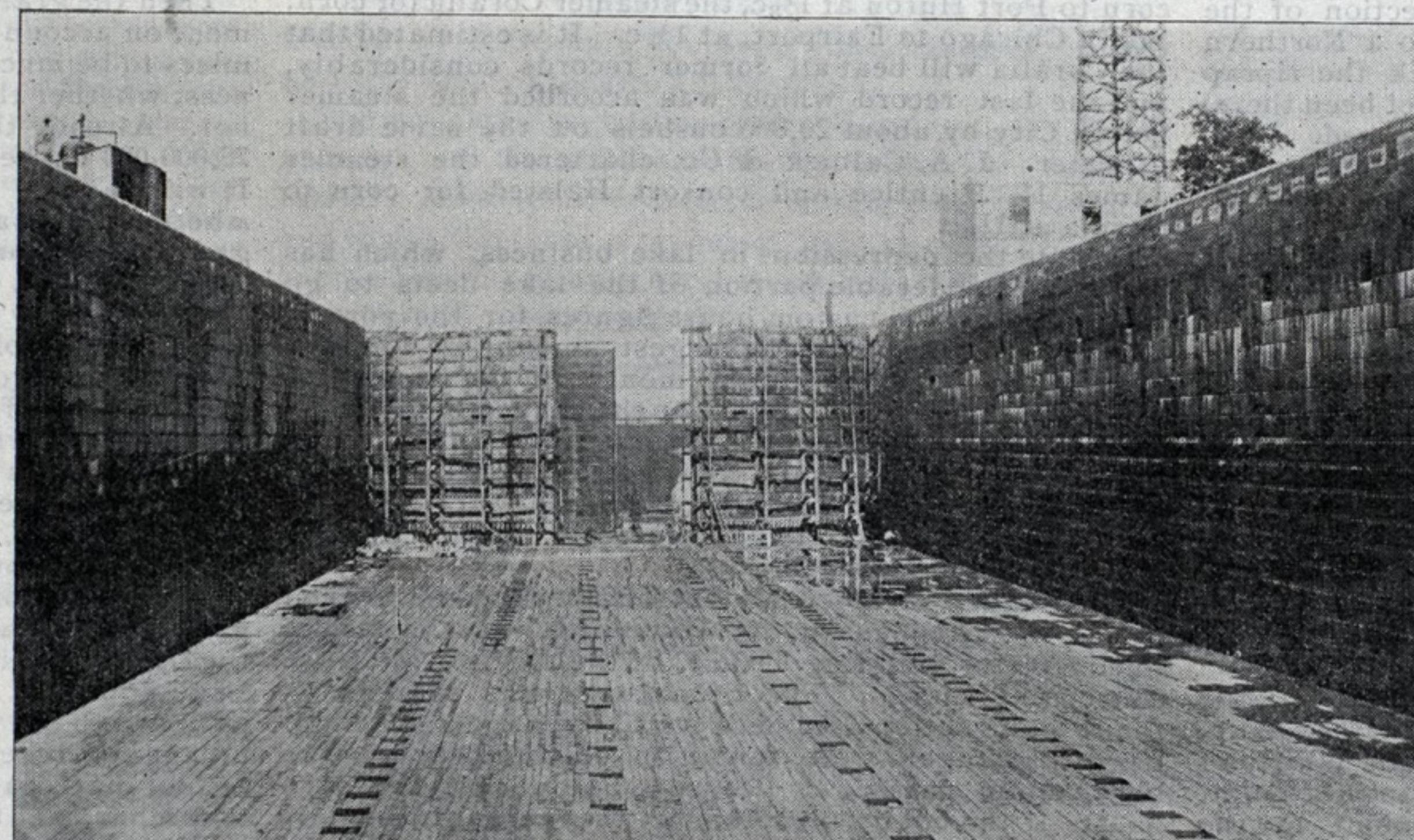
size, and carried on solid steel trunnions 10 inches in diameter. The valves are three inches thick on the edge and 16 inches in the middle. When they are opened there is an effective passage of 64 square feet.

The upper guard and lock gates are 26 feet 6 inches in height; the intermediate and lower gates are 43 feet in height, and the lower guard gate 25 feet 6 inches in height. The gates are all of the uniform length of a trifle over 55 feet. They are the largest gates of steel in the world. Each leaf of the smaller gates weighs about 100 tons, and the larger ones 190 tons. Each leaf has two air pumps and air chambers, situated near the bottom of the gates, and the two water chambers a few feet above the center. The air and water chambers are used in conjunction to preserve the equilibrium of the gates and to prevent undue strain upon the quoin posts, or hinges of the gates. The air pumps are operated by hand from the tops of the gates. The gates, with the anchorages, cost \$203,000. Willard S. Pope was the contractor, and they were built by the Detroit Bridge and Iron Works.

The hydraulic capstans are two in number, one being located at the upper, and the other at the lower end of the lock, on the south side. They are similar in appearance to the ordinary naval capstan. They are driven by three single-acting oscillating hydraulic engines, and each will develop a hauling power of 19,000 pounds on an ordinary line. The capstans will be used, when necessary, in assisting vessels through the lock when they have no power of their own. The machinery of the capstans is set down in the wall in a circular opening.

The operating machinery was built by the Variety Iron Works Co., of Cleveland, the contract price being about \$60,000. It was designed in the U. S. Engineers' office at Detroit by Mr. F. M. Dunlap, who also supervised its construction in the shops at Cleveland, where it was all erected, being afterwards taken down and put in place in the lock under the superintendence of Mr. L. A. Pettit, foreman at the Variety Iron Works.

The work of providing means for lifting and lowering boats between the level of Lake Superior and that of St. Mary's River, below the rapids, was begun over forty years ago. In 1853 a company was organized in New York which completed a lock in 1855 at a cost of \$1,000,000. The property was acquired and completed by the State of Michigan, the original company having failed to carry out the work. The great value of the canal, which, small as it was, by comparison with the present, was yet almost large enough for the then requirements, encouraged Congress to give federal aid, and in 1870 an appropriation of \$150,000 was made towards securing a more capacious lock. Some 750,000 acres of land had been donated by Congress to be used in payment for the original canal, but when money appropriations began to be made, the situation became such that by 1881 it was deemed advisable that the state of Michigan cede the canal to the United States government. Work on what is now called the old lock, the use of which is just now discontinued, was then begun, and completed at a cost of \$2,150,000, being on the site of, and really an enlargement of, the original lock.



THE NEW AMERICAN LOCK.

Interior view of the chamber before filling with water.

reverse direction when the other is set. The gates revolve, when opened, into semi-circular recesses in the sides of the lock, thus leaving the full width available for the passage of vessels. The working parts of the gate machines are of the finest steel, with bearings of bronze. Each machine weighs about ten tons and stands 5 feet high, while the drums are 6 feet in diameter. The cable on each gate machine runs through sheaves in passages through the walls to the bottom of the chamber, where it is connected with the gate. The gate machinery is entirely different from any in use for similar purposes, and represents a combination of hoisting machinery and the best hydraulic practice.

Six of the valve engines are placed at the upper, and 6 at the lower end of the lock. These are direct-acting, horizontal cylinders and move the valves by means of connecting-rods which run from the crossheads to the valves. These engines are operated by vertical valves placed on the top of the south wall, which are connected with them by piping in such a way that each valve controls two engines. Twelve valves are used in filling and emptying the chamber. These valves and frames are of the best wrought steel, 8 by 10 feet in

NEWS AROUND THE LAKES.

CLEVELAND.

FACTS ABOUT ANOTHER CONTROVERSY BETWEEN THE CITY AND THE UNITED STATES ENGINEERS.

CLEVELAND, August 5.

Some controversy has again arisen over the damage to the steamer Say When on July 18, of last year, which was incurred by striking a sunken wreck in the west breakwater basin. The matter was taken up by the city Board of Control which, without investigating either the law or the facts, passed resolutions calling the attention of the Secretary of War to the occurrence, the resolutions being virtually a complaint of the manner in which Col. Jared A. Smith was attending to the office duties—this too, without communicating in any way with Col. Smith on the subject. Spurred on by the acts of the board of which he was the ex-officio secretary, the mayor's private secretary, Mr. McClure, took occasion to also go off at half-cock and to write, in a letter enclosing the resolutions, some amazing statements expressed in a most unequivocal manner, and representing that he had personal knowledge of the alleged facts, which were that sundry ancient wrecks decorated the bottom of the harbor, and were a constant menace to commerce of the port.

The letter and resolutions were at once referred back to Col. Smith, who instituted an investigation, but was unable to get any but the most evasive replies from either the mayor, his secretary, or the Department of Accounts and General Gossip, to which the matter for some mysterious reason was referred. They admitted that they had been without personal knowledge of the facts on which they so glibly expressed themselves, but said they had been told by two gentlemen connected with the marine fraternity, whom they mentioned by name. A survey of the harbor was instituted and six submerged wrecks were found, every one of them inside the harbor lines, and all of which it devolved upon the city to remove. The only obstructions outside the harbor line were a stump, close to the breakwater, with about 18 feet of water over it, a timber embedded in the bottom in 20 feet of water, which has since been removed, and about 50 feet of the wreck of the old steamer Wah-napitae, which lies at the end of the breakwater near the light, and in a position where no vessel could strike it without first running upon the riprap protection of the breakwater. This very mishap occurred to a Northern Line steamer a year or so ago, which struck the riprap and injured her bottom. Had the riprap not been there, the breakwater would have been badly damaged.

Capt. Todd, master of the Say When, pointed out, as closely as he could, the place where he struck the obstruction. He might have struck at either of two places, very close to the spot he pointed out; but one of these is 150 feet, and the other 350 feet inside the harbor line. Should Col. Smith attempt to remove any of these wrecks which the city's boy mayor has so loudly complained of, he would have done the work at his own expense, for any claim presented for harbor operations inside the harbor lines would certainly be disallowed by the War Department. It is little wonder that Col. Smith referred to the letter and the resolutions as an act of extreme discourtesy to his office, as well as an unwarranted slander upon the commercial facilities of the port; for not one of these wrecks lies in any position near where any freight or passenger boat has any business whatever.

Now it appears that the mayor is "dissatisfied" at the language of Col. Smith's report. And what is more, the owner of the Say When, ex-Congressman White, of whom out of all this crowd it can be said that he "ought to know better," has resented the statement in the report in a public interview, and has allowed himself to be quoted as making a very serious charge against the engineers' office. If the statement imputed to Mr. White is true, he should lay his information, with proper affidavits, before the War Department. If the charges are untrue, or if he has been misquoted, he owes it to both himself and the engineer in charge to set himself right. The writer had the pleasure, several months ago, of seeing a carefully prepared chart of the outer and inner harbor, projected on a large scale, with the location of all these wrecks plainly marked. If the city administration is so anxious for their removal, why has it not taken sufficient pains to look the matter up and to remove the wrecks? Not that it is really necessary, for the space they occupy will all be dry land in a few years; but this escapade seems rather an aggravated case of the absurdities to which we have become so accustomed in this and other city administrations. It is only just to state, however, that the gentleman who now occupies the post of secretary to the Mayor and the Board of Control, has too much sense, tact, and modesty to soil good writing paper with unauthenticated statements tending to belittle and cast reflections upon his own city and port.

Among the more prominent visitors to this port this week were Capt. Wesley Brown, of the Northern Steamship Line, and Capt. Howard Shaw, who has charge of Eddy-Shaw fleet.

Mr. W. J. Wood, the well-known marine architect, has been spending his vacation with friends in the city, and in camp with Troop A, of which he is a member. Mr. Wood has been with the Goodrich Transportation

Co., of Lake Michigan, for more than a year past, as designer and superintendent of construction of the steamer Iowa, and has been retained to look after contemplated improvements and additions to the company's fleet for another year.

CHICAGO.

ONE SIDE OF THE STORY OF A LAKE MICHIGAN COLLISION—PORT STATISTICS FOR JULY—THE NEW STEAMER IOWA.

Special Correspondence to *The Marine Record*.

OFFICE OF THE MARINE RECORD, CHICAGO, August 5.

The Huron Line steamer F. & P. M. No. 1, bound for Milwaukee, collided with the schooner George Sturges Sunday night, at 10:30 o'clock, about four miles off Waukegan. The schooners Sturges and Elgin were in tow of the Independent Line tug D. P. Hall. The story is that the tug, seeing the steamer approaching, signaled her, blowing two whistles, and the steamer responded with one; the tug gave two blasts in response, and kept on her course with the schooners. The steamer answered with two blasts and starboarded her wheel to go astern of the Sturges, and then, without giving another signal, put her wheel to port and struck the Sturges on the starboard bow. She then ran ahead of the schooner and across her bows, getting the tow line under her bottom, and nearly rolled the tug over. The tow line was cut by the steamer at about the same time it was let go by the tug to prevent her rolling over. The Sturges received some damage to her rail and cat-head and head-gear. The master of the steamer has since resigned.

Henry B. Burger, shipbuilder, of Manitowoc, was in Chicago on Saturday.

J. J. Rardon & Co. chartered the steamer Arizona and consorts Plymouth and Scotia for corn to Kingston at $2\frac{1}{4}$ c, the steamer George H. Hadley for corn to Buffalo at $1\frac{1}{4}$ c. Capt. John Prindiville chartered the steamer Philip Minch for corn to Buffalo at $1\frac{1}{4}$ c, the steamer Frontenac for corn to Port Huron at $1\frac{1}{4}$ c, the steamer Norwalk for corn to Kingston at $2\frac{1}{4}$ c. Carr & Blair chartered the steamer Lindsay for corn to Port Huron at $1\frac{1}{4}$ c, the steamer George T. Hope for corn to Buffalo at $1\frac{1}{4}$ c, the schooner J. C. Fitzpatrick for corn to Fairport at $1\frac{1}{4}$ c, the steamers Tampa and John F. Eddy for corn to Port Huron at $1\frac{1}{4}$ c, the steamer Coralia for corn, South Chicago to Fairport, at $1\frac{1}{4}$ c. It is estimated that the Coralia will beat all former records considerably, and the last record which was accorded the steamer Queen City by about 20,000 bushels on the same draft of water. J. A. Calbick & Co. chartered the steamer James H. Prentice and consort Halsted for corn to Sarnia at $1\frac{1}{4}$ c.

Despite the depression in lake business, which has caused a considerable portion of the lake fleets to go into ordinary, the custom house figures for the port of Chicago for July show the largest amount of tonnage entering and clearing for one month in the history of Chicago. The total arrivals for the district amount to 1,035,671 tons, there being 1,415 vessels. Of this 202,970 tons are charged to South Chicago, and 728,418 tons to Chicago. The coastwise clearances amount to 991,789 tons, of which 298,853 tons were from South Chicago, and 692,936 tons from Chicago.

The lumber steamer I. Watson Stephenson, owned by L. W. Stephenson, of Menominee, was yesterday fined \$500 for violating Title 52 of the Revised Statutes concerning vessels. The Stephenson was boarded by the revenue cutter Calumet several days ago and a number of passengers were found on board, although the boat had no passenger license. The passengers were guests of the boat's owners, but the letter of the law was violated.

The old schooner Tempest, which had been dismantled and allowed to remain idle for a period of ten years or more, was towed into the lake by one of the Dunham Line tugs and sunk last week. The Tempest was built at Racine by Gilson in 1848. She came out originally as a fore-and-aft, but in 1869 was rebuilt, lengthened and given a mizzenmast. The measurement of the craft in enlarged form was 156 net tons. During the World's Fair an effort was made to have the Tempest fitted out and exhibited as a representative of the old time fleet of lake vessels, but the idea was abandoned.

James L. Higgin, Jr., Receiver for the Vessel Owner's Towing Company, sold the tug Protection to the Dunham Towing and Wrecking Company for \$4,250 cash.

The steamer George Dunbar has been laid up, Captain Turner thinking it better to lay her up than to run her into debt.

The Goodrich Transportation Co.'s new steamer Iowa arrived here Tuesday morning, at 10:50, on her maiden trip to this port. She made the run from Manitowoc in twelve hours and fifty minutes, which is considered a good run with new machinery. Her dimensions are 203 feet keel, 218 feet over all, 36 feet beam, $12\frac{1}{2}$ feet hold; engine steeple compound, 21 and 44 by 36; two Scotch type boilers, $10\frac{1}{2}$ by 10 feet, allowed 140 lbs. steam pressure. C. F. Elmes, Chicago, built the engine, and John Mohr & Sons the boilers. The Iowa is a three-decker; she has 52 staterooms on the cabin deck, and 24 on the hurricane deck; also a fine smoking-room on the hurricane deck. There is a handsome

stairway leading from the main cabin forward to the ladies' vestibule on the hurricane deck, and also a handsome stairway from the main cabin aft to the upper aft staterooms. The stairways and offices on the steamer are finished in hardwood of birch; the saloon, and upper cabins and staterooms, are painted Nile green, and the carpets are moquette of light green, with pink flowers. The fittings and furnishing throughout of cabins and staterooms are very neat and tasty, and they have all modern conveniences and comforts for the traveling public. The Iowa was built by Burger & Burger, at Manitowoc, and is as good as the best of wood and iron and workmanship can make her, and in addition to the heavy, well-fastened timber with which she is built, she has a truss of diagonal steel strapping. Her officers are Captain J. C. Raleigh; first mate, Wm. Oetling; chief engineer, J. Bushman; purser, C. B. Hamilton; steward, Henry McCarthy. The Iowa will leave here Wednesday evening on the route between Chicago, Grand Haven and Muskegon, taking the place of the steamer City of Rome until further orders. WILLIAMS.

BUFFALO.

GOOD LUMBER AND GRAIN RECEIPTS IN SPITE OF THE APPARENT DEADNESS—LINERS IN COMMISSION AGAIN.

Special Correspondence to *The Marine Record*.

BUFFALO, August 4.

These are the days when the vessel owner is wondering where he is at and what he will be at next week. Coal freights took their final plunge Monday, when shippers refused to pay more than 20c to any port, and vessel owners said, "Do please let us have some to carry at that rate, or we must tie up," but even then the shippers held off and appear not to be ready to send it forward in any quantity. So far, next to nothing has tied up here. A few of the smaller line boats stopped a short time, but they are mostly in business again. But it will have to come yet, to all appearance.

There is a strange boom in the lumber trade, so far as this port is concerned. With the lumbermen complaining that there is no life in the business, all at once the boats began to pile the lumber into this port, and they brought us a matter of 62,000,000 feet in July, which is more than half the entire amount of the season. The fleet has now dropped off somewhat, but the receipts promise to be large for some time yet.

Then the grain has poured in with scarcely any abatement on account of the midsummer season, and it promises to be much the largest season in the grain business, whether there is any more ore or coal to carry or not. Already the total grain and flour received exceeds 75,000,000 bushels, with the fleet coming in still large. It will have to be settled here and now, apparently, whether there are any 400-foot boats that can carry grain at 1c or $1\frac{1}{4}$ c per bushel and make a living, going up light. These are hard lines, but they have opened the way for carrying freight at a great reduction from the old rates. But for occasional pinching times there would still have been a 12c rate from Chicago to Buffalo, just as there was in the '60's, with vessels still carrying cargoes of 10,000 bushels.

Everybody is talking about the monster load brought in here this week by the new steamer Senator, 238,062 bushels of oats, or 3,808 tons, and wondering when this style of going one better is going to stop. It appears that the Senator is not going to bring down any more grain right away. She has proved what she can do on the Lake Superior draft, and will now go for ore to Lake Superior. As she has a good contract, she will not need to get back to Chicago till the elevators fill up again. It seemed almost incredible to observe her 13-foot mark part way out of the water when she began to discharge at the Bennett elevator.

There was the usual big crowd at the launch of the Union Liner Ramapo last Saturday, and there were some extras out besides. The wheelmen and wheel-women were, of course, out in force, and the roofs and masts of vessels in the vicinity were black with youngsters. One roof was so loaded down with them that one newspaper man took some notes preparatory to writing the scene up if the roof fell in. On a convenient shed roof the management had prepared a sort of grand stand for the reporters and photographers, which was a decided novelty here. Probably the most enjoyment was taken in by a company that came from out of the city in a carry-all. We are not used to seeing the 20-foot mark on vessels launched for the lake trade, but it was remarked that the second cipher on the Ramapo was far enough down her side to be submerged without coming up to her gangways.

Of course the vessel offices are filled these days with talk on the political outlook, but somehow there has no free-silver orator developed here yet among vessel men. May be some other port has a few to spare and will lend us one, just to keep the talk lively. Capt. H. Smith is one of the men who never says much of a matter unless there seems to be reason for it, so he merely wears a very yellow marigold in his buttonhole and remarks quietly that he is for gold.

The schooner St. Lawrence will never find out who hit her on her trip down the lakes, it seems. After doing some patching afloat she has gone into dry-dock to complete the job.

Mayor Jewett has appointed a strong citizens' committee to advise in the matter of developing the water

front and finishing the breakwater. As President Brown, of the Lake Carriers' Association, is at its head, the technical knowledge necessary is provided, especially as Councilman Ash, an old vessel man, is also a member. Capt. Brown ought to be especially anxious for the development of the harbor, as he is part owner of the steamer *Lagonda*.

This is a great season for shipping salt from here by lake to Chicago. It is mainly Warsaw salt, that comes in less than 100 miles by rail. Formerly but little of it went by lake, as vessels did not like to handle it, but now they will take anything that pays a cent. The salt men have found this out, and began by forcing the rate down to a level with coal; and now they get the pick of the vessels besides.

The effort to locate the transportation men who offered to take grain at Chicago last week free of Buffalo charges, has failed. The associated elevators deny any such attempt, and it does not appear that any was placed. The canal men are not in it, either, and say that they are getting most of their grain out of the regular houses, in spite of the existence of one or two wild elevators.

After a mishap or two the steam yacht *Enquirer* is getting her gait all right, and is already a welcome visitor at the various resorts in this vicinity, first taking in the lake-side stopping places and then going down the river in a perfectly democratic fashion. She has already developed some very pretty speed.

CHAMBERLIN.

DETROIT.
CUT RATES AMONG PASSENGER LINES—THE PROPOSED TELEPHONE CONNECTIONS AT POINT AU PELEE—MR. SHAW AND THE SAULT REGULATIONS.

Special Correspondence to The Marine Record.

DETROIT, August 5.

Manager John Walsh, of J. & T. Hurley's business, says that though the hard times are of course felt in their business some, they have so far succeeded in keeping up business fairly well. The *Mongaon* bringing coal from Cleveland to Sandwich at 25c has a short route, and the *Majestic* is carrying wheat from Duluth to Buffalo at 1½c. The *Mystic Star* is also carrying rye, Detroit to Buffalo, at 1¼c.

All vessel men and vessel owners should combine in effort to have the Dummy lighthouse connected as soon as possible with the North Passage telegraph cable. More boats pass that point than any other lake lighthouse on fresh water, and there are very often accidents more or less serious there. The cable has four connections on Pelee Island, one quite near the life-saving station there, and two on the mainland, one at Leamington and one on the end of Point Pelee. The Canadian government, too, intends connecting this line with the Bell Telephone Co.'s lines direct, thus establishing universal connection, and enabling news to be conveyed with the greatest speed in all directions. This change will probably be effected next year, but it may not be amiss to call the vessel men's attention to the matter, that any suggestions they may see fit to make may be acted upon in making the change.

Another matter that should call for marine attention is the unmarked reefs around Pelee Island. There is the Middle Ground, between the Dummy and Pelee lighthouse, Mile Point Reef and Chic-a-no-lee Reef lie

south of the usual track of through bound vessels. There have been enough accidents, especially on Chic-a-no-lee Reef, to warrant a buoy at least, if not a light. A gas buoy would be very serviceable there; also at Mill Point Reef. With the Middle Ground vessels are better acquainted and can better avoid it.

The surprising travel on the D & C line, though spoken of in these columns before, deserves one more mention. The Star-Cole combination cut rates and thus canceled their agreement with the D. & C. and People's line a few days ago, as a result of which the other lines cut too, and are now combined, practically against the former line. On Sunday last the City of the Straits took over 700 people to Put-in-Bay from Toledo, to spend a few hours, and on Wednesday all the staterooms of the City of Mackinac were filled for days ahead with orders to reserve for Mackinac. In spite of the hard times this line has succeeded in eclipsing its records in the past.

John C. Shaw has been attacked, both in Detroit and Cleveland, for the part he took in suggesting changes in the rules now governing the navigation of the St. Mary's River. These attacks have been most uncalled for, first, because Mr. Shaw is financially interested in the Eddy-Shaw fleet; second, because he is an admiralty lawyer, and as such his interests are identical with those of vessel owners. Mr. Shaw holds master's papers and sailed for years, so his experience is worth something, also from a practical point of view. But the truth is, Mr. Shaw is backed up by vessel interests in making these suggestions public. Mr. Shaw was accused of haste, when the truth was, his action was the result of mature deliberation and conferences with different clients.

McC.

WRECKS AND WRECKING.

The mishaps reported during the week have been, luckily, of a very minor character. The *Waverly*, reported last week as being stranded at Death's Door, was released by the steamer *Argo* after lightering. The tug *Leathem*, from Sturgeon Bay, also rendered assistance. The *Waverly* had 1,400 tons of ore on board. She ran out 2 feet 9 inches forward and 1 foot aft. She went on about 700 feet northwest of the black nun buoy, with her starboard bow to the buoy. Pilot Island light bore E. by N. ½ N. and she was heading about SE.

The schooner *Reindeer*, which has been lying on the bottom at Ashtabula for some time, has been raised, and will receive repairs at Cleveland.

The wrecking expedition from Sturgeon Bay is still at work on the schooner *Mattie C. Bell* at Summer Island. Most of the coal has been taken out of her hold and hydraulic jacks are being used to roll the wreck over in order to patch her bottom, after which she will be pulled into deep water.

The Weather Bureau announces that owing to the completion of the new lock at the Sault, the stage of water there will not be announced by telegraph after the 10th.

THE FREIGHT SITUATION.

The vessels which have been placed in ordinary are once in awhile called out again, but there is a lack of wild cargoes which is very remarkable for this time of year. Twice as much soft coal has been shipped to Lake Superior as last season to corresponding date, and cargoes are extremely scarce. Now is the usual time for cleaning out the elevators for the reception of new wheat at the head of the lakes, and the consequent increase in grain shipments is expected to prove of some relief.

Practically no wild ore is being offered. The talk that some contract ore will be held over to next year is without sufficient warrant, as nearly all the ore placed in contracts last spring had already been sold, and the comparatively high freight rate is amply covered in the advanced prices of ore. The vessel men took their medicine gracefully on last year's contracts, and the ore dealers realize that such a request would be unfair, and that the staving off of delivery by the furnaces is an entirely separate matter. Ore rates remain nominally at 60c from the head of the lakes, 50c from Marquette, and 40c from Escanaba. Hard coal pays 20c and soft coal 25c to any port. Chicago grain shipments are improving, and 1¼c is now paid on corn to Buffalo.

Major W. L. Marshall, Corps of Engineers, advertises on Page 13 for bids for dredging Calumet River and harbor.

SAULT CANAL RECORD FOR JULY.

The traffic through the St. Mary's Falls Canal for July shows in its total tonnage a slight increase over that of June, both as to east and west-bound trade. Wheat shipments show an increase of about 40 per cent, but shipments of other grains show a decided falling off. Flour shipments were a little heavier and iron ore shows a falling off of about 16 good sized cargoes, the shipments from Lake Superior being 1,367,431 gross tons, as compared with 1,418,231 gross tons in June. An increase over last July's shipments is still shown, the showing for the corresponding month last year being 1,312,355 gross tons. The total shipments to August 1 also show quite an increase over shipments to the same date last year, being 3,902,880 gross tons, as compared with 3,580,839 gross tons to August 1, 1895. Hard coal shipments to Lake Superior are not much more than half what they were in June, and only about two-thirds what they were in July, 1895. Soft coal shows an increase of about 50,000 tons over June, and about 40,000 tons over July last year. About 32,408 tons additional of anthracite has been shipped to Lake Superior, and the shipments of soft coal are just about twice what they were last year to August 1.

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR

FOR THE MONTH OF JULY, 1896, INCLUDING STATISTICS OF THE UNITED STATES AND CANADIAN CANALS AT SAULT STE. MARIE, MICHIGAN, AND ONTARIO.

ITEMS.	EAST BOUND.			July, 1896.			July, 1895			Total to August 1, 1896.			To Aug. 1, 1895.	
	U. S. Canal.	Canadian Canal.	Total.	U. S. Canal.	Canadian Canal.	Total.	U. S. Canal.	Canadian Canal.	Total.	U. S. Canal.	Canadian Canal.	Total.		
Copper, net tons.....	17,155	2,104	19,259	17,812			17,812	53,069	7,461	60,530		53,992		
Grain, other than wheat, bushels.....	1,927,433	365,079	2,292,512	2,859			2,859	7,084,529	2,635,184	9,723,713		2,89		
Building stone, net tons.....	4,225		4,225	3,747			3,747	8,115	1,140	9,255		12,520		
Flour, barrels.....	765,833	323,384	1,089,217	858,582	Not open	858,582	2,285,152	755,630	3,040,782	3,540,807				
Iron ore, net tons.....	815,961	723,562	1,539,523	1,469,838	to	1,469,838	2,723,907	1,747,319	4,471,226	4,010,540				
Iron, pig, net tons.....	4,967	1,115	6,082	4,581	naviga-	4,581	7,858	5,815	13,673	12,037				
Lumber, M. ft. B. M.....	111,733	5,062	116,795	133,243	tion.	133,243	330,647	14,000	344,647	357,180				
Silver ore, net tons.....			100			100				100				
Wheat, bushels.....	2,789,206	4,037,835	6,836,041	2,713,030			2,713,030	16,404,815	9,532,411	25,937,226		8,959,991		
Unclassified freight, net tons.....	31,511	8,485	39,996	31,478			31,478	72,349	23,908	96,257		73,609		
Passengers.....	3,220	1,975	5,195	3,647			3,647	5,484	3,458	8,942		7,081		
WEST BOUND.														
Coal (hard), net tons.....	28,610	11,500	40,110	62,589			62,589	120,132	56,169	176,301		143,893		
Coal (soft), net tons.....	223,418	246,975	740,393	432,873			432,873	832,620	469,176	1,301,796		662,630		
Flour, barrels.....					Not open			62		62		150		
Grain, bushels.....				10,400	to	10,400	1,109			1,109		28,650		
Manufactured iron, net tons.....	14,590	3,330	17,920	10,878	naviga-	10,878	41,058	3,339	44,397	31,317				
Salt, barrels.....	26,207	4,135	30,342	37,165	tion.	37,165	107,571	5,536	113,107	127,515				
Unclassified freight, net tons.....	30,824	11,628	42,452	41,608		41,608	115,041	31,825	114,866	125,350				
Passengers.....	2,792	2,768	5,560	4,256			4,256	4,636	4,468	9,104		7,322		
East bound freight, net tons.....			2,152,953				1,923,835			6,471,218				
West bound freight, net tons.....			574,916				533,752			1,724,073				
Total.....				2,727,869				2,477,587			8,195,291			

NOTE.—United States craft passing in July, 2,215; Canadian craft, 1,202; total craft, 3,417; United States craft, registered tonnage, 1,855,060; Canadian craft, registered tonnage, 1,074,695; total registered tonnage, 2,929,755.

AIDS TO NAVIGATION.

THE TWENTY-FOOT CHANNEL PROJECT.

Col. J. G. Lydecker, Engineer Corps, U. S. A., stationed at Detroit, has filed with Chief of Engineers Craighill his annual report, describing the progress made during the year ended June 30, upon the twenty-foot channel project. He first refers to Section 1, a channel 21 feet deep and 300 feet wide at Round Island Shoals, St. Mary's River, and calls attention to the exposed locality, stating that here the channel should be deepened to 23 feet and widened to 800 feet to serve the best interests of navigation.

The work on Section 2, for which was provided a channel 21 feet deep and 300 feet wide in Little Mud Lake, between the lower end of Sugar Island and the lower end of the "Dark Hole," will have been completed, says the report, by August 1.

Section 3, a channel 21 feet deep and 300 feet wide through a reef at Sailors' Encampment, will be finished by October, at the latest.

On Section 4, a channel 21 feet deep and 300 feet wide through a shoal in Mud Lake, 1½ miles below Sailors' Encampment, the work is practically completed, with the exception of a small portion of the shoal left on the west side of the channel.

The work on Section 5, which consists of a channel 21 feet deep and 2,400 feet wide at the foot of Lake Huron, will be completed by September, and the east half of the channel has already been thrown open to navigation.

Section 6 is a channel 20 feet deep from deep water in St. Clair River, through St. Clair Flats canal, to deep water in Lake St. Clair, with a width above the canal not greater than 650 feet, thence for the full width of the canal for its entire length, thence gradually widening to 800 feet in Lake St. Clair. The improvement in the canal, which contemplated driving a row of sheet piling along the channel face and dredging the area between the dykes to a depth of 20 feet, continuing the depth above and below to deep water, has been practically completed, except the deepening of the channel to 20 feet. The superstructure has become badly decayed and is much in need of repair, but the funds at present available are entirely insufficient to warrant any undertaking in the direction of renewal. "The canal," says thereport, "is now much too small to furnish proper facilities for the increasing commerce passing through it; for the commerce is practically identical with that through the Detroit River, which, during the season of 1895, comprised more than 36,100 vessels carrying 25,850,000 tons of freight."

Section 7 is a channel 20 feet deep and 800 feet wide through Grosse Pointe Flats, Lake St. Clair. It is believed that this work will be finished during the present season.

Section 8, a channel 21 feet deep and 800 feet wide through the bar at the mouth of Detroit River, is nearly finished, and the east half has been thrown open to navigation. The remaining work is chiefly of a cleaning up character.

A hydrographic survey was made of Sections 1, 2, 3, 4, 5, and 8 during the winter of 1894-5, and for the purpose of estimating and controlling the improvement work ice surveys were again made of Sections 2, 3 and 8 during last February and March. A topographical survey was made of the mouth of Detroit River at odd times between 1894-6.

Col. Lydecker's report refers at some length to the canal traffic, the new lock and Hay Lake channel, and goes on to say that the rapid increase in the number of boats adds largely to the danger of accidents during the night navigation of the Middle Neebish, and makes the project of widening the channel, through the rock at that locality to 400 feet, one of great importance. It is also important that a portion of this channel, a distance

of 2,500 feet, which has been improved to a depth of 20 feet, should be deepened to 21 feet. The work of the entire project is so far advanced that no additional appropriation will be necessary to complete it.

The report devotes special attention to the improvement of Detroit River, and reviews most of the work done. An examination of the channel between Ballard's Reef and Limekiln Crossing, on each side of Grosse Isle lower ranges, was made in 1893, which showed the channel to be obstructed by large boulders and other material, limiting the draft of vessels to 16½ feet. A contract was subsequently entered into with Carkin, Stukey & Cram, on October, 1894, for the removal of shoals near Ballard's Reef. Work was commenced November 17, 1894, and continued to June 30, 1896, being suspended during the winter months only. The channel was to be completed by December 1, 1895, to a width of 600 feet and a depth of 20 feet. Owing to unforeseen difficulties, which developed during the progress of the work, this contract has been found unjust to the contractors, and its termination with the payment of all the retained percentages has been authorized to take effect when the eastern half of the channel has been cleared up to a depth of 20 feet. The time for the completion of the contract has been extended to October 1. Up to June 30, 16,097 cubic yards, scow measurement, have been removed, clearing the channel to 18 feet over a width of 600 feet. The upper 2,200 feet, east of the center line, have been dredged and cleaned up to a depth of twenty feet; and

Huron. The object at St. Joseph is to provide a channel 16 feet deep to the upper limits of the St. Joseph harbor, and 13 feet from thence to Benton Harbor. The work was begun in 1896, and up to date \$460,835 has been expended—\$19,438 during the past fiscal year—in dredging and rebuilding a part of the north pier. Col. Lydecker says that revetments should be built up in both sides of Benton Harbor canal, in order to make any dredged channel permanent, but that this should not be done at government expense, as the canal is purely for local benefit.

A little dredging was done at South Haven and Saugatuck. Operations at Holland were confined to dredging and pier improvements. At Grand Haven the south pier was repaired and new revetments built. At Muskegon a 15-foot channel was obtained for \$5,305. Dredging at Pentwater increased the depth temporarily from 9 to 13 feet. The piers at Manistee were repaired for \$1,348. The Manistee & Northeastern Railroad Co. was allowed, in 1893, to occupy a government revetment on condition that they would keep it in repair, which they have not done. At Frankfort, \$14,194 was spent in extending the north and south piers. The harbor of refuge at Portage Lake has been dredged and the north pier repaired. Operations at Charlevoix were confined to dredging the channels from Lake Michigan to Round Lake and thence to Pine Lake. The north and west breakwaters at Petoskey were nearly completed during the year.

At Cheboygan, \$15,441 was spent, giving a channel 110 feet wide and 16 feet deep. Operations on Saginaw River have been confined to repairs of dykes, dredging shoals, etc., giving at its mouth a channel 125 feet wide, 700 feet long, and 16 feet deep; a few minor repairs were made on the harbor of refuge at Sand Beach, Lake Huron. No work has been done in Black River since 1893, but it is proposed to re-dredge that part of the shoal which adjoins the through channel of St. Clair River at the mouth of Black River. No work was done on Rouge River, and the channel is said to be slowly shoaling. No work has been done upon the turning basin at the mouth of Rouge River, the appropriation of \$5,000 for acquisition of land and beginning construction being considered too small.

WORK AT CHICAGO.

Major W. L. Marshall, Corps of Engineers, U. S. A., who has charge of Illinois, river and harbor work,

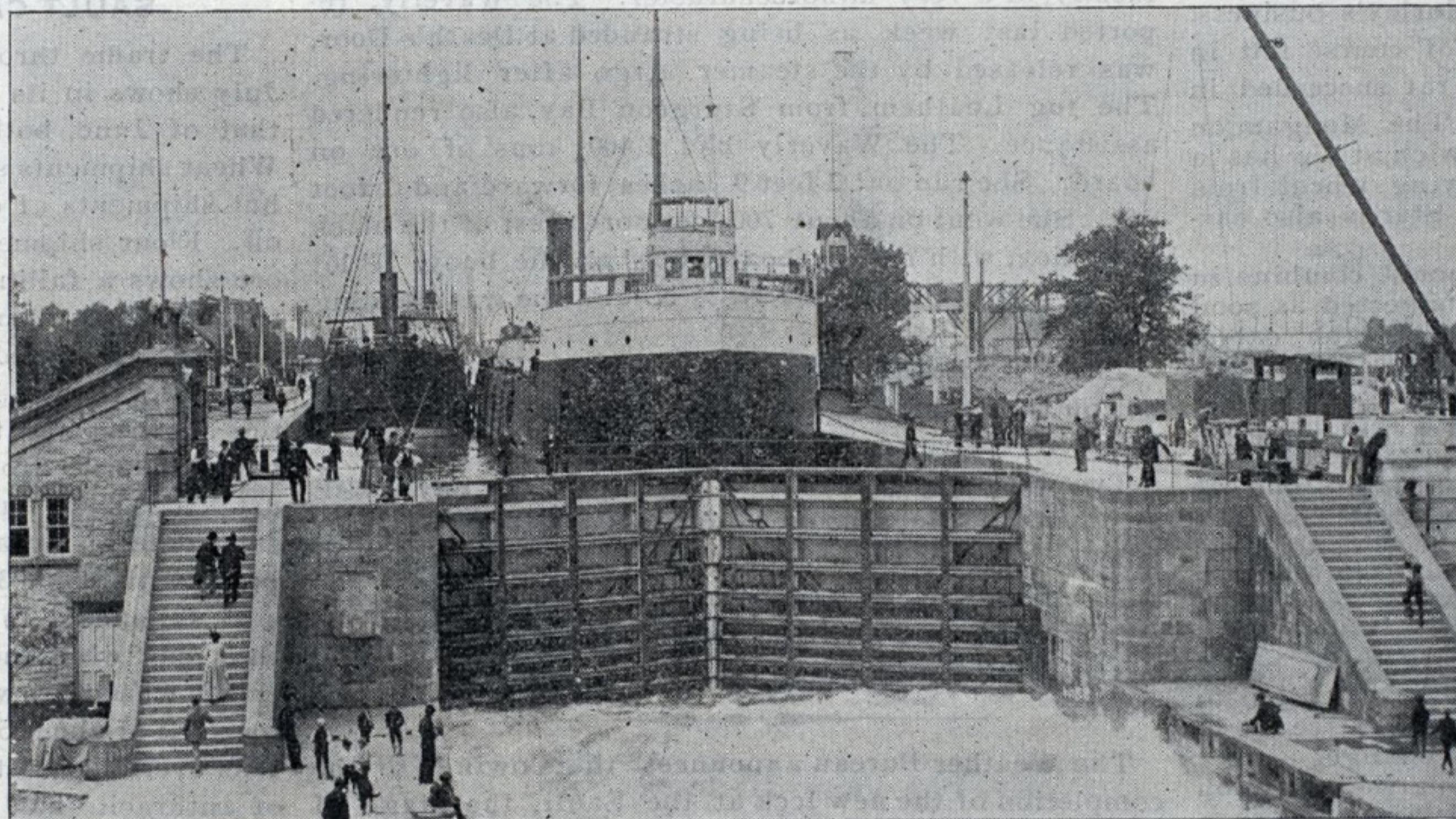
states in his annual report that at Chicago harbor the unfinished portion of the breakwater, to be repaired, was completed. The 2,200 linear feet of new superstructure contracted for were constructed and the, as yet, uncovered part of the breakwater was provided with decking, consisting of 6-inch pine timbers. Dredging in the channel at the mouth of the river was also carried on and practically completed in May. The sum of \$60,754 was expended during the year and there remains an available balance of \$83,602 to be used at this point. It is proposed to use this amount in maintaining the present works and dredging Chicago River.

The channel between the piers in the Calumet harbor has been maintained at the required depth, but the increase in size and draft of vessels makes 16 feet depth no longer sufficient. There is an available balance of \$77,844. The improvement of the Calumet River, says the report, in connection with the development of Calumet harbor, has been followed by immediate results which fully justify the expenditures made.

LAKE SUPERIOR IMPROVEMENTS.

The report of Major Clinton E. Sears, Corps of Engineers, U. S. A., in charge of river and harbor improvements on Lake Superior, shows that there is an available balance of \$27,960 for continuing the improvements at Ashland harbor. The work at Two Harbors will be completed by next November, and encouraging progress has been made on the work at Duluth and Superior.

The total cost of improvement of the harbor at Onton-



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the upper 1,000 feet, west of the center line, have been dredged to 20 feet. The east half of the channel will probably be completed previous to October. A large number of boulders were removed from the channel below Limekiln Crossing during May and June, clearing the channel to a depth of 18 feet and a width of 600 feet.

Assistant Engineer Dixon, in charge of Section 8, makes a supplementary report giving minute details of a line of levels run from the United States beach mark at Trenton, Mich., to Bar Point, to determine the elevations above mean tide at New York, and the location of beach marks and water gauges. These elevations vary from 572,795 at the Limekiln Crossing, at the old M. C. R. slip, to 604,541 feet at Martin's stone dwelling, abreast of Limekiln Crossing.

Under contract with J. A. Smith, 970,769 cubic yards of material have been removed up to June 30, 1896, in the Detroit River channel, and the work is completed except some cleaning up.

The Canadian schooner Mary, sunk in St. Clair River in collision, was removed as an obstruction to navigation last October, at a cost of \$1,202. The report also refers to the harbor lines established at Detroit and Grosse Isle.

THE COAST OF MICHIGAN.

Col. Lydecker has also filed his annual report regarding the river and harbor improvements on the east coast of Lake Michigan and the west coast of Lake

agon to June 30, 1895, has been \$326,720, which secured a good navigable 12-foot channel, which has remained in fairly good shape. A small sum was expended last year in maintaining the channel. The amount appropriated by this Congress (\$10,000) will be withheld until the freshets subside sufficiently to show where it can be expended most effectively. The commerce of this port is estimated at \$1,000,000.

The amount expended on the Portage Lake ship canal up to June 30, 1895, was \$183,412. The channel has been deepened during the past year to give a good 15 feet at low water, and several minor improvements made. The channel has also been widened to 70 feet. During the season of 1895 the commerce through this waterway amounted to 1,731 vessels, 957,000 registered tonnage, and 822,000 net freight tonnage, valued at \$29,832,000, not including local tug business, estimated at \$290,770.

The amount expended on Marquette harbor to June 30, 1895, was \$478,413, and 470 feet of breakwater has been constructed. The results have been the complete protection of ore, coal, lumber and commercial docks. The results due to the expenditure during the fiscal year ended June 30, 1896, have been to make permanent 470 feet of breakwater, which affords this protection, thus dispensing with renewals every fifteen or twenty years. In twenty years the commerce of this port has amounted to at least \$70,000,000.

LAKE ERIE IMPROVEMENTS.

The annual report of Col. Jared A. Smith, which had lately been filed with the Chief of Engineers, covers the river and harbor work from Monroe, Mich., to Conneaut, O., inclusive. In regard to the first-mentioned port he reports the expenditure during the past fiscal year of \$4,536.75, used in repairs to piers and to complete dredging. In view of the fact that a survey and estimates for a 14-foot channel were called for by the recently-enacted river and harbor act, a few remarks contained in the report are of interest. He says the mean depth of water to the wharves is 9 feet. Of the nearly 400 arrivals and clearances reported for that port during the year only 38 commercial vessels, including tugs with rafts, went up the river to the freight docks, all the other arrivals and clearances being of excursion steamers which landed at a hotel near the mouth of the piers.

At Toledo there was \$64,536.28 expended on the straight-channel project, the sum serving to complete it, and to deepen the water over the Lake Shore shoal 18 and 19 feet. Also the removal of the wreck of the small schooner Ferret, sunk by collision in the straight channel.

At Port Clinton only \$63.97 was used, chiefly for traveling and incidental expenses. The pier there is reported in bad condition, and it is suggested that it might be reinforced by piling more riprap stone around the bottom.

At Sandusky the dredging was continued, at a cost of \$12,388.87, leaving an available balance of nearly \$6,000. The project for coming improvement here contemplates a jetty starting from the outermost range light on Cedar Point and extending 2,500 feet or more in a lakeward direction past the southeastern edge of the Deep Hole, which is formed by the scouring caused by the wind raising and lowering the water in the bay and forming a current inward and outward; and which, while it has this scouring effect right off Cedar Point, deposits sediment elsewhere and forms shoals. The general conditions of Sandusky Bay very much resemble those at the harbor at Galveston, Tex. The improvement also contemplates the building of a 2,500-foot dyke from the most northeasterly edge of the Deep Hole, and extending parallel with and 300 feet from the projected line of the jetty. This will, it is thought, extend the channel permanently into the deep water in the lake.

At Huron the extension of 72 feet to the pier was com-

pleted last September. The expenditures during the year were \$7,870.55. At Vermillion no money was expended; the \$2,000 available was insufficient to do any work of a permanent character, and the piers are in too bad shape to repair. The east pier is in ruins for 1,000 feet inside the shore line. The only work that can be done is to rebuild the west pier so far as the funds will allow.

At Lorain the extension to the west pier was completed, and considerable dredging done. The amount spent was \$7,347.27. The sand has reduced the depth of water in the river two feet since the spring of 1895, and formed a bar across the entrance. A reserve fund of \$10,000 is kept for dredging.

At Cleveland \$9,596.19 was used for dredging, making the cut in the breakwater, and repairing the breakwater. The contract for rebuilding 322 feet of the east pier was let in June, and the work has now begun. The project for improving the harbor and rebuilding the west pier was postponed to a later communication.

At Fairport \$1,827.58, and at Ashtabula \$26,123 was expended, chiefly for dredging in each case, although the work done at the latter port was chiefly through rock. The inner limit of government work was changed to a considerable distance farther in shore, and the channel was dredged to 20 feet. At Conneaut the expenditures amounted to \$22,987.43, chiefly for permanent work, including 600 feet of east pier, and extensions of pier 526 feet long and a special revetment to the channel bank. The projects outlined for all three of these ports contemplate the construction of

LAKE ONTARIO.

According to the annual report of Major Stanton, the 14-foot channel at Charlotte, N. Y., has been maintained and the east pier extended 121 feet, and at both Great and Little Sodus Bay dredging has been continued to improve the channels.

At Oswego the breakwater was thoroughly repaired where it had been injured in the 1884 storm. At Sackett's Harbor a surveyor developed the existence under water of a jetty 112 feet long, of which there is no record of construction.

NOTICE TO MARINERS.

A DANGEROUS NEST OF BOULDERS.

Assistant Engineer W. T. Blunt, of Toledo, informs THE RECORD that he has located a very ugly reef, thought to be that on which the John Oades, Hesper and American Eagle have struck at various times. It is a large pile of boulders, with a general depth of 15 feet over it, and in places but 13 feet. Two large boulders with but 11 feet over their tops, stand in 19 feet of water and are exceedingly dangerous. The shoal resembles a dumb-bell in shape, and is 350 feet long by 150 feet wide. Marblehead, eight buoys, SE. by S. $\frac{1}{2}$ S.; eastern edge of Ballast Island, N. $\frac{1}{2}$ W.; Lakeside dock, S. by E., $\frac{1}{2}$ E.; South Point, South Bass Island, NW. by W. $\frac{1}{2}$ W.; black can, Scott Point Shoal, W. $\frac{1}{4}$ N., $\frac{1}{2}$ miles; Carpenter Point, E. $\frac{1}{2}$ N., $\frac{1}{2}$ miles. The reef is marked by a spar buoy with horizontal red and black stripes.

NOTES FOR NAVIGATORS.

Elbow Buoy No. 8, a red 25-foot spar has been established in 12 feet of water at the elbow of the shoal at the head of Strawberry Island, about midway between the inland and mainland, in Niagara River. The draw pier of International Bridge bears S. $\frac{1}{2}$ E., and the south end of Strawberry Island WSW.

Nice shoal buoy No. 4, a red 25-foot spar in Tonawanda channel, was discontinued June 3.

Richelieu & Ontario boats have been bothered by low water in St. Lawrence River of late years. A good deal of delay has resulted near Split Rock, between Coteau and Beauharnois. Two pilots of the company took soundings here with the result that the boats now use the channel north of that chiefly in use.

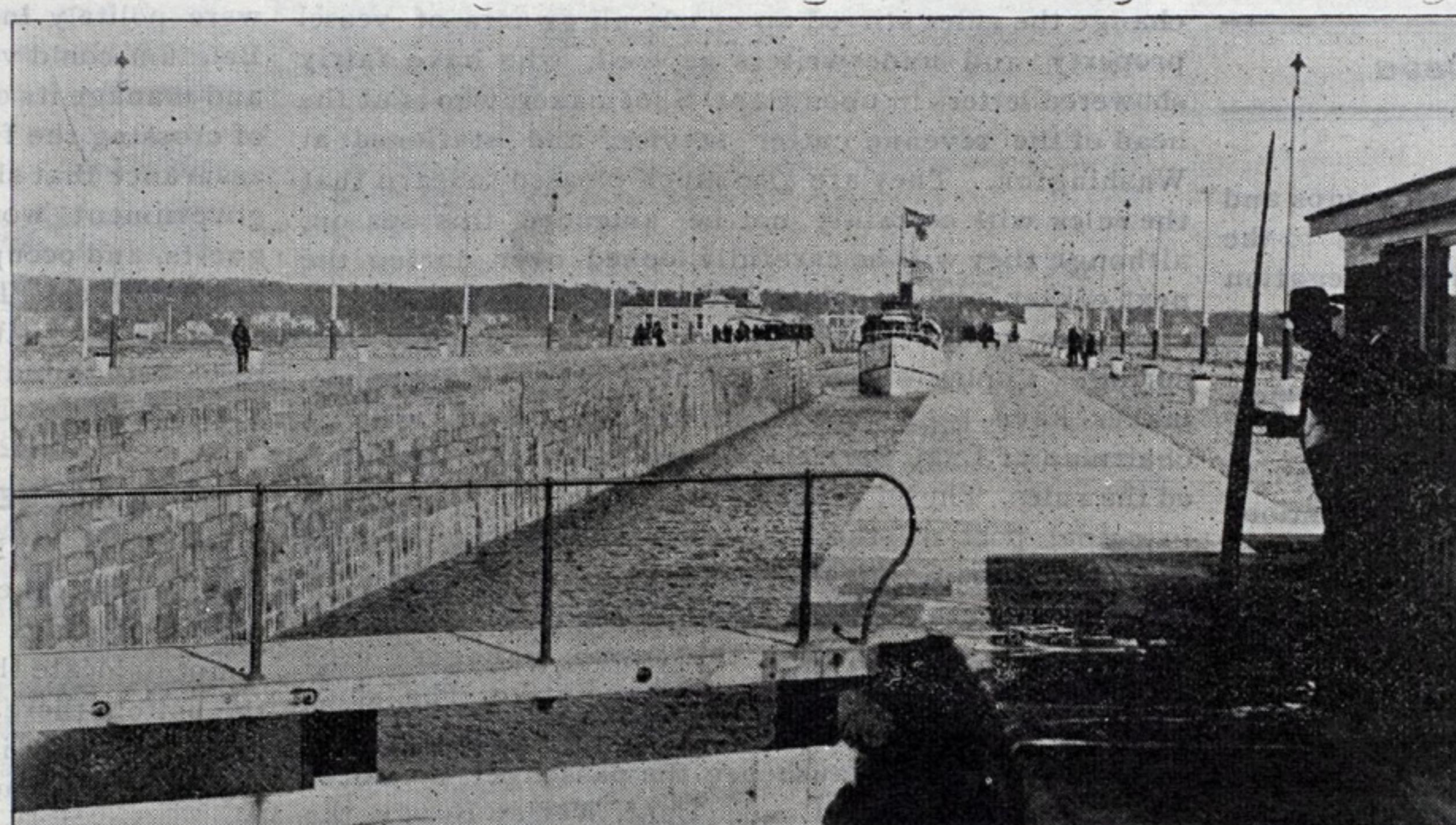
For the purpose of giving warning of the approach of tropical hurricanes (and also of those extremely severe and dangerous

storms which sometimes pass across the lake region and north Atlantic coast), the Weather Bureau has adopted a special signal called the hurricane signal, consisting of two red flags with black centers, displayed one above the other. This signal will be displayed at all weather bureau offices and wind-signal display stations on the Atlantic and Gulf coasts and the Great Lakes, and also at numerous other points at sea and lake ports and along the coasts mentioned. No distinctive night signal will be used.

Notice boards have been established by the government of Canada at intervals along the south coast of Vancouver Island, between Cape Beale lighthouse and San Juan Harbour, British Columbia. These boards contain information, for the use of shipwrecked mariners, respecting the direction and distance of the nearest lighthouse and also of the nearest Indian village where assistance can be obtained. Seamen are cautioned in the event of a wreck in this locality to stay by the ship as long as possible, because all loss of life heretofore recorded has occurred in the attempt to land, or through exposure after landing, while wrecks have not been broken up rapidly.

BALTIMORE, MD., January 27, 1896.
H. G. Trout, Esq., King Iron Works, Buffalo, N. Y.
Dear Sir: I would state that the propeller wheels furnished by you for our steamers Baltimore and Charlotte have proven very satisfactory.

I have directed our superintendent engineer to duplicate them, so that in case of accident we would always have a spare wheel of your make to put on the steamer.
Yours truly, REUBEN FOSTER, Gen. Mgr.



THE CANADIAN LOCK.

It is longer, but not so wide as the new American lock, and was opened last autumn.

breakwater dykes, placed at such angles to the piers as to keep the seas from sweeping sand into the channel outside the piers, and assuring a safe entrance.

A very important suggestion was made by Col. Smith, and that was that he be allowed to have a steel steamer built at a cost not to exceed \$20,000, which should replace the steamer Swansea, which is not seaworthy enough for use after this season. The steamer will be in service constantly for several seasons to come, and will spend most of her time at Toledo. It is recom-

mended in the interest of economy that \$10,000 be taken from the Toledo appropriation, \$2,000 from Cleveland, \$1,500 each from Sandusky, Lorain, Fairport and Ashtabula, \$1,000 from Conneaut and small sums from other ports to make up the \$20,000, or to pay for the steamer, if she cost less, in proportion to the above. The steamer would be available at all times, and could be used to much advantage in hydrographic surveys, such as is now being held between the islands of Lake Erie and the mainland, by Assistant Engineer Blunt.

The report of Major Symonds, stationed at Buffalo, states that at Buffalo the expenditures of the year were chiefly for repairs to the breakwater. At Erie the channel has been maintained by similar repairs. Horseshoe channel, in Niagara River, was completed 400 feet wide and 18 feet deep by dredging. At Strawberry Island a cut 120 feet wide was excavated, and at Tonawanda Island a depth of 18 feet was dredged along the harbor front. At the head of Conners Island a channel 200 feet wide, 12 feet deep, was finished through the shoal, well within the estimated cost.



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HERE AND THERE.

Two leading American shipbuilders—the Cramps and the Union Iron Works—have submitted tenders to the Japanese government, through that country's legation at Washington, for the construction of two fast cruisers. The prices have not, of course, been made public, as the Japanese government will act finally upon the bids. The two vessels called for are to be of the Yoshima type, but the builders have furnished their own specifications, which without doubt contain many suggestions for improvement. The cruisers are to be about 370 feet long by 48 feet beam, with a displacement of about 4,700 tons on a draft of 17½ feet, with a speed of 20½ knots under natural and 22½ knots under forced draft, the machinery to be of 15,000 horse-power. Good work and good results are to be considered before price, and while there is some competition from French yards, it is safe to say that for many considerations the contract will certainly be awarded in America. Representatives of the Japanese government have visited both the yards named and reported upon them most favorably.

Renewed fault-finding comes, this time from Detroit, with the White law and the St. Mary's River regulations, and once more the blame for alleged errors in these is laid upon the sturdy shoulders of Capt. Wm. S. Mack. The impression seems to have gotten out that Capt. Mack assembled himself in his cheery little den on the top floor of "The Anchorage," his beautiful home in Lakewood, and hammered and sawed until he had made laws and rules which, he claimed, could not be broken. Now, the truth is that so far as Capt. Mack's energy in this direction is concerned, it was devoted only to securing some laws which should cover the requirements, respectively, of the lake traffic and of navigation through the Sault, treating all the varied interests with strict equity, and securing proper protection for each. As for the provisions contained in the White law and in the Sault regulations, Capt. Mack had much less to say in regard to what they should be than many others. He merely saw to it that the movements to secure them did not fall through because of anybody's indifference or activity. Capt. Mack is not to be held responsible because, through violation of the White law, a collision occurs, or because some ship is fined for violating the very reasonable requirements contained in the new Sault regulations.

A fresh error has in some manner gotten afloat, and a Detroit paper has heralded the statement, quoting that gentleman as authority, that Mr. H. D. Goulder, gen-

eral counsel of the Lake Carriers' Association, had made arrangements with Mr. Eugene T. Chamberlain, Commissioner of Navigation, by which the payment of fines is to be suspended until the close of navigation. This, it is further stated, amounts to a flat back-down on the part of Capt. Mack's supporters, and an admission that the rules contain serious errors. As a matter of fact, both premises and deductions are wrong. Mr. Goulder has arranged with Mr. Chamberlain for a postponement of the hearing in the cases of several vessels whose owners are ordinary clients of Mr. Goulder. In these cases the questions involved are purely those of fact, and the merits of the rules do not come into discussion at all. The masters of certain vessels, in short, plead "not guilty," and the amount of the fines have been deposited, under protest, as security that the vessel will abide by the result of such investigation as may be held later. This is, to be sure, a rather unusual course, but this is because the fines are usually imposed in "ground-hog cases;" if a vessel has not her tonnage cut on the beam, or if she has not her proper papers on board, the cases are *prima facie* evidence, and to contest would be equally useless and absurd. The cases postponed are, as we have tried to make plain before, purely individual cases, carrying no precedent with them; and Commissioner Chamberlain has consented to delay the investigation purely as a matter of courtesy to Mr. Goulder, who wishes to enjoy a much-needed vacation. The postponement, at any rate, is only until September.

The announcement that a movement was on foot to change the rules stirred up nearly all owners of vessel property and underwriters as well, who have fairly showered letters in upon Capt. Shoemaker, who is at the head of the revenue cutter service, and stationed at Washington. They are also much pleased to learn that the rules will certainly not be amended this season, although they will be carefully looked over during the next winter, and possibilities for improvement discussed, according to the original programme arranged last spring. Copies of some of the letters to Capt. Shoemaker have been forwarded to Capt. Mack, who is chairman of Lake Carriers' Committee which formulated the rules. The letters show representation from every principal port on the lakes, including Detroit, where the little opposition seems to center. The letters came from the owners of fast boats, and the rules were given unqualified approval, save that some managers urge still greater stringency on some points. The ships which have the greatest show of reason to complain of the reduced speed clause are the passenger steamers North West and North Land. Capt. Wesley Brown, the "comodore," according to lake phrasology, of these steamships, declared himself, a few days since, in the hearing of the writer, as heartily in favor of the existing rules and their rigid enforcement.

The aggregate distance of the two stretches for which the reduced speed and strict passing regulations were drawn up, is less than 21 miles. The first stretch on the way down, is only 6½ miles, occupying, at seven miles per hour, 54 minutes. The center stretch is 14 miles, and requires two hours. The increase in speed to eleven miles an hour which has been talked of would result in a saving of only one hour of time, while an accident that would throw a boat across one of these narrow channels and sink her would prove a serious blow to traffic even in such dull times as these. One thing is certain, and that is the almost entire absence of accidents, great and small, in the Sault this season, and when this is compared with the records made last year and previously, the rules should be given at least some credit.

In view of the fact that contemptuous reference has been made in some quarters to the condition of the lost barge Little Wissahickon, it is due both to underwriters and owners that something be said in addition to that which has heretofore appeared in these columns. The statement was that the underwriters had entirely lost sight of her and others of her class, and referred to her as an old coffin. The underwriters are not in the habit of losing sight of these vessels, however apparently insignificant, no matter whether duly enrolled in the Inland Lloyds Register or not. But the

Little Wissahickon has never been left out of the register since she was first enrolled, and is duly entered in the edition of 1896 as rateing B1, for coarse freight only. She has been regularly inspected, and manager Dan McLeod, of the Inland Lloyds Register, pronounces that she was kept up unusually well for a lumber vessel. Capt. George McKay, who was lost on her, had an excellent reputation among underwriters for keeping up his boats and sailing them carefully.

An episode which lately occurred in Belgium makes one long sometimes for a taste of a little European despotism as opposed to the much vaunted freedom of speech and action which in this country is so liberally interpreted that if some repressive measures are not taken it will soon border on anarchy. These labor agitators from England went over to Antwerp, and convened a secret meeting of dock laborers, and sailors, and firemen. These men had been working contentedly, and there were no points of difference between them and their employers. The three "champions of labor's cause," (one of them, by the way, is a British M. P.) made some inflammatory speeches, with a view to inciting a strike; but their speeches when translated to the workmen in their native Belgian, lost much of the original fire imparted by the eloquent agitators, and the meeting did not turn out a success. A second meeting was called, which was set for the July 10; but the master stevedores this time addressed a petition to the burgomaster, asking him to interfere for the sake of public order. He laid the petition before the Minister of Justice, and when the three arrived in Antwerp they were politely informed by the police authorities that Belgium could very well dispense with their services and manage its own affairs. They were given the option of crossing the frontier within twelve hours, with the assurance that should they decide to remain longer the government would insist upon their becoming its guests, and occupying the well-known hotel in the Rue des Beguines. The celebrated agitators decided not to extend their visit; and thereby what they had expected to be an ignominious campaign was brought to an ignominious end.

A CLEVELAND DIVING APPARATUS.

Mr. Carlos D. Myers has completed his diving apparatus, and has taken it to Alpena for experimenting purposes. His idea is to go down in Lake Huron and to attempt to locate the steel steamer Norman, which lies on the bottom there. Unless the project looks very feasible after the wreck is found, it is not likely that any attempt will be made to raise her this fall. Mr. Myers desires particularly to take a photograph of some wreck at the depth of 100 feet or more, and to show this, with affidavits as to the depth in which the wreck lies, in order to convince skeptics as to the merits of his apparatus. This once accomplished, Mr. Myers' fortune is made.

The apparatus is not a bell, as it has been called in the daily press, but is a large chamber in which air is circulated by means of pumps, there being no compression of air, as in a bell. The chamber is fitted with a telephone, electric search-light, ports all around its circumference, and apparatus for moving the car in a circular direction on its base, and backward and forward as well, for a distance of several feet. It has an arm fitted with grapping iron on the outside, but operated from within, and has means for casting off the base in case of accident, when the car will be sufficiently buoyant to go to the top, notwithstanding the great thickness of its walls, necessary to resist the pressure of the water. The present car was calculated to successfully resist pressure at a depth of 1,000 feet, and the large tube which encloses the air tubes, telephone wires, etc., is reinforced with steel, and tested to the same pressure by means of hydraulic power, to insure it against closing. Mr. Myers has worked untiringly at this machine for several years and feels confident of success, as it is all worked out on well-known mechanical principles, and its chief point is the carefully calculated strength necessary to insure sufficient resistance to water pressure at great depths.

Two Excelsior hoists, which have been in use on the Minnesota dock, Ashtabula, for years have been removed to Marquette.

SHIP BUILDING AND REPAIRS.

LAUNCHES OF THE WEEK.

SIR WILLIAM FAIRBAIRN.—The fourth steamship of the new fleet of the Bessemer Steamship Co. was launched at 2:30 o'clock last Saturday afternoon, August 1, at the Wyandotte yard of the Detroit Dry-Dock Co. She is the largest steamer yet launched, having an over-all length of 438 feet, with 414 feet between perpendiculars, 45½ feet beam, and 28 feet molded depth. She is built on the channel system and in quality of material and general arrangement of quarters is the same as other ships of the fleet. Her engine is triple-expansion, 24, 38 and 64 by 42 inches, and she will have two boilers, 14½ by 11½ feet, tested to 165 pounds working pressure, and equipped with the Howden draft. Her wheel is 14 feet in diameter. Her water bottom is subdivided in the usual manner into eight compartments. The Fairbairn will be ready for sea in a month, and it is expected that her sister ship, the Robert Fulton, will be launched in two weeks.

Almost everything about the Fairbairn is of steel, so that she may be considered fire-proof. Her shapes, if laid out in a straight line, would stretch 17 miles and 4 rods, and her plates would measure 7 miles 38 rods. There were 415,503 rivets driven into her hull.

RAMAPO.—The new steamship building by the Union Dry-dock Co., of Buffalo, for the Union Steamboat Co., was launched last Saturday afternoon, August 1. She is the largest boat ever built at that port, although she is not quite so long as the Oswego and Chemung, of the same fleet, she exceeds them in both beam and depth. The Ramapo is built on the channel system, and has a 54-inch water bottom, and the hold is divided into nine water-tight compartments. Her over-all length is 340 feet, and on deck 336 feet, with 319 feet between perpendiculars, 44 feet beam, and 27 feet 3 inches depth. She has 4 feet sheer forward and 2½ feet aft, which will give her the "straight back" appearance.

One feature of the Ramapo, which was named in honor of a New York way station on the Erie Railroad, is the absence of woodwork on the hull. She has a full spar and main deck of steel, without wooden sheathing, and rails, fenders, and ceilings in the hold are entirely of metal. She is expected to carry 6,000 tons on 16 feet draft, and is fitted with gangways for handling package freight.

The engines were built by the King Iron Works, of Buffalo, and are of the usual triplex type, with cylinders 23, 38½, and 64 inches in diameter by 42 inches stroke of piston. The four boilers were built by the Lake Erie Boiler Works, of Buffalo. Each is 11½ by 13 feet, with two 44-inch furnaces, and allowed a working pressure of 175 pounds. She is expected to make 14 miles per hour, loaded. The water ballast is handled by means of two 8 by 14 by 16-inch pumps. The Ramapo is equipped between decks with a double-cylinder vertical hoisting engine, 10 by 12 inches. The line shafting from this engine operates double drums for eight hatches. She is fitted with a steam steering gear of the latest pattern from Williamson Bros., Philadelphia. Her windlass equipment is furnished by the American Ship Windlass Co., of Providence, R. I., and consists of capstans and windlass. The electric light plant consists of a vertical double-acting 6 by 6-inch engine, directly coupled to an automatic dynamo of power sufficient to sustain 150 16-candle-power lamps.

The houses for the crew are located on the spar deck. The captain, mates, wheelmen, and lookouts will be located forward; deck hands and firemen, amidships; and engineers, oilers and steward's crew, aft. The quarters will be heated throughout by steam.

CHICAGO.—At Miller Bros.' shipyard the tug Saugatuck, of St. Ignace, is in dock to have a leak stopped around the stern-pipe, repairs to stern bearing, and some calking; the tug Wm. L. Ewing to have a leak stopped, a new piece of bottom plank, and some calking; the tug J. H. Hackley for repairs to shoe and a new wheel; the steamer Bon Ami for repairs to stern bearing; the tug Charmer to have leaks stopped.

At the Chicago Ship Building Co.'s shipyard the steamer Marina was in dock and received seven new

steel plates on her bottom. The steamer City of Racine was in for repairs to her rudder and shoe.

At the Independent Tug Line's floating dry-dock the tug R. Prindiville was in for recalking all over, and one of Fitzsimmons & Connell's lighters for a thorough overhauling and part rebuild.

The tug Crosby is at Dunham's dock having her cylinder bored by Robert Tarrant.

THE ENGINEER'S SERVICES.

To the Editor of *The Marine Record*:

Your attention is invited to the following clipping from the Detroit Free Press of late date, which follows the announcement that Manager L. M. Bowers, of the Bessemer Steamship Co., will pay a bonus of \$100 to \$500 to the master whose record for good work during the season:

Of course it is understood that the "good work" consists in driving the boat for all there is in her, in assisting, so far as their powers go, in giving her quick dispatch in port, in putting her through all sorts of weather, that she may lose no time in going from port to port, and in keeping her out of harm's way. This is all that can be expected of a master, and indeed the general scarcity of the ability to do all this is what induces Manager Bowers to offer the prizes. For the season of eight months \$2,000 is a princely sum, compared with the salaries paid ashore to men of much greater brain ability than it takes to manage a lake steamer. When the Mutual Line had been in existence a couple of years it was understood that Capt. William Cummings, the senior master, besides being given command of the newest boat, was paid a commission on all trips above a certain number for the season, this number having been figured out by the experts who built the boat, and who knew just about what she could do. To make this commission, which it is stated amounted in one season to \$2,000, Cummings summoned all his nerve and ran his boat night and day, Sunday and week day, in storm and in calm, through fog, through snow, through ice, all the time avoiding collision with other vessels and with rocks and shoals. The reward for all his labor and care was considerably more than is paid to the average master.

I would like to ask Manager Bowers what the captains of his ships do that they drive their ships from port to port with such speed, and drive them through storms and bad weather. Are they sail boats or steamships? In the latter case, I always thought, and in fact I know, that the driving part of a steamship lies with the engineer.

According to this theory the captain is the only man on the ship. I suppose, taking this theory, in case one of the flyers, the North Land or North West, becoming disabled in her engines, the four masters that they carry would put on their overalls, rush to the engine-room, drive the engineers to the deck or bridge and repair the damage, then after giving them a good calling down would allow them to return to look after the captain's and his three masters' work (nit). While there is no doubt but the captains can at times hasten the loading and unloading of his ship, there are many times he can do nothing, as the stevedores have full charge. Again, I would like to ask of what use a captain is to a ship like our modern steamships with pole spars with her engine disabled? There are few deck hands on the lakes to-day that could not give a line to a passing steamer or a tug, or bring her to port.

A MARINE ENGINEER.

Steady readers of *THE RECORD* understand fully that it has been the aim of this paper to hold to view, as much as possible, the claims and merits of the engineer, who is becoming almost with each year a more important person on the ship. It is necessary, in the first place, to correct "Marine Engineer's" impression with regard to the article which we regret being unable to reprint in full for lack of space. The article is in the nature of comment and reminiscent gossip on the part of the Free Press, and not of Mr. Bowers. So the ideas with which fault is found should not be attributed to him entirely.

In the first place, the meaning of the phrase "good work," as here given, has been slightly misinterpreted by the Free Press, the practices here cited and condemned being almost entirely obsolete. Time was, when it was considered on the lakes that a steel ship was invulnerable unless she should encounter a fellow with great force; but the sad loss of a few of the largest dispelled that notion. Masters of some lines were expected to bring their steamers around on a schedule time, not for entering and leaving alone, but for reaching

certain points on the way, and if a ship was reported as passing the Sault or the rivers at a certain time, which showed her to be some hours late, the master was held accountable for the delay, no matter what the weather.

Now all this has changed; it was against nature that such a system should obtain for any length of time without bad results. "Good work" means many other things, although taking advantage of every odd minute that may be used in saving time, is one of the points most appreciated. But a master is not expected to race his boat up and down the lakes, causing the consumption of twice the usual amount of fuel in order to save time. The master has many opportunities to hasten things along, especially during his stay in port. Another requisite is economy in purchasing supplies for the boat, tact in keeping the crew contented and willing to remain with the boat through the season, care in navigation, so as to prevent accidents and keep the boats out of the dry-docks and repair yards—in fact there are a hundred ways in which it is advisable to turn the captain's interests in the same direction as those of the owners. This is not a new idea, but has been followed for years. The practice most popular with owners of large freighters is to have the master take a small interest in the ship which he sails, and this has proved most efficacious.

At the same time, while the master's scope is perhaps wider, as it allows the bringing into play his varied faculties—what is true of the captain is equally true of the engineer, although, perhaps, not to the same extent, when expressed in dollars and cents. Any incentive offered to insure additional care of machinery, neatness of engine room, economy in the use of fuel and lubricants, with prompt action in cases where repair work becomes necessary—any incentive offered to secure this is money well expended. No man is quicker to perceive all this, and while the competitive system is hardly perfected so as to be in running order yet, the engineers of the Bessemer fleet may feel assured that any extra diligence and care shown in the management of the machinery department will soon be detected and suitable evidence of appreciation given.

A RUMORED CAR FERRY PROJECT.

There are indications that Columbus, Sandusky & Hocking Railroad has been negotiating for the construction or charter of car ferry barges, with a view to widening its territory. Arrangements were begun by somebody with W. & M. Railroad, by which the new car ferry and tug built recently at the Craigs Shipyard, Toledo, were to ply between Sandusky and Lake Michigan, but the plan does not seem to have been followed up by any movement of the boats in that direction.

FLOTSAM AND JETSAM.

The Tilden mine, employing 600 men, has shut down completely, and the Newport mine has reduced its force from 300 to 50 men.

Andrew Barber, of Chicago, fell overboard from the schooner C. P. Minch, on lower Lake Huron Tuesday, and was drowned.

Deputy U. S. Marshal Shannon sold the barge Sonora for \$260 at Toledo, Monday. C. A. Chamberlain, of Detroit, bid her in.

Capt. John Griffin, of the steamer City of Louisville, is confined to his bed as the result of a murderous attack upon him at the Milwaukee docks, by a discharged member of the crew.

T. E. Martin, Manager of the Canadian Pacific Railway's terminals at Prescott, Ont., announces that the capacity of company's elevator there will be doubled, work to begin at once.

Capt. Thomas E. Harbottle in command of the steamer Havana, died at Houghton, Mich., Monday morning, after an illness of only three days with Appendicitis. He was born at Hamilton, Ont., in 1857, and was unmarried. He was a prominent member of the Ship Masters Association and of the Masonic Fraternity.

All owners of grain elevators at Superior have given notice to their employes to quit work. These elevators have a capacity of 12,700,000 bushels of grain, and the action is the result of the attempt of the Superior Board of Trade to oust the Minnesota grain inspection there and enforce a new Wisconsin system. All grain heretofore inspected in Superior will be inspected in Duluth and Sandstone, Minn.

OPENING OF THE NEW AMERICAN LOCK.

(CONTINUED FROM PAGE 3.)

But the growth of lake commerce had been out of all proportion to expectations, and the representations made to Congress were such that the construction of the new lock was authorized late in the eighties. General O. M. Poe, lately deceased, was assigned to the work, and the first contract, that of excavating, was let to Collins & Farwell, of Detroit, who began work in April, 1889, and finished in May, 1891. Their estimates amounted to \$204,000, but owing to some misunderstanding between the firm and the government, a final settlement has not yet been reached. The masonry contract was let to Hughes Bros. & Bangs, of Syracuse, N. Y., who began work in June, 1891, and completed it in July, 1895. They received payment as follows: Masonry, \$1,150,445; lock floors, \$274,800; snubbing hooks, \$15,098; turbine power plant, \$37,800; excavation, \$10,400. The work has progressed under the immediate supervision of Supt. E. S. Wheeler, whose assistants were Engineers Jos. Ripley, J. L. Callard, Frank Reed, L. C. Sabin, F. C. Shenehon, Benno Rohnert, C. Y. Dixon, and F. M. Dunlap.

Donnelly & Co. have completed a channel 60 feet wide and 22 feet deep at both approaches to the canal, far ahead of the time required by contract, and have thereby earned a bonus of \$12,000. The canal itself has been completed considerably ahead of contract time, and while the estimate expense of constructing the lock and its approaches was \$4,738,865, the actual cost will come well inside of that sum.

TACOMA'S OCEAN COMMERCE.

Harbormaster Hoflin makes the following report of the ocean commerce at the port of Tacoma for the month of June, 1896:

IMPORTS.	VALUE.
Cargo N. P. S. S. Olympia from China and Japan.....	\$ 249,536.57
Previously reported.....	1,183,878.75
Total imports six months.....	\$1,433,415.32
Imports same period last year.....	2,782,209.84
EXPORTS.	VALUE.
52,476 bushels wheat (Africa).....	\$ 49,065.10
24,926 barrels flour (China and Japan).....	79,025 00
4,850,000 feet lumber (Australia, Africa and California).....	45,655.50
30,360 tons coal (San Francisco).....	91,395.00
Miscellaneous mdse. to China and Japan. " " British Columbia.	209,490.50 23,182.85
Total.....	\$ 497,813.95
Previously reported.....	2,679,205.24
Total exports six months.....	\$3,177,019.19
Exports same period last year.....	2,307,609.93

Inward registered tonnage, 41,636; outward registered tonnage, 45,706; inward cargo tonnage, 4,623; outward cargo tonnage, 52,560; deep sea arrivals, 33; departures, 31.

PASSENGER STEAMER FOR LAKE BAIKAL.

John Reid & Co., Ltd., Whiteinch, Eng., have launched for passenger service on Lake Baikal, Siberia, a twin-screw steamer, in the design and construction of which some special features have been introduced to meet the exigencies of her varied voyage by sea and river to her far-off destination. The vessel is 115 feet by 18 feet by 9 feet, is fitted throughout with electric light, and has been constructed for Mr. Nemtchinoff. Her two sets of triple-expansion engines and other auxiliary machinery are being fitted by Messrs. Alley & Maclellan, Polmadie, Glasgow, through whom the contract was negotiated. (This is the same firm which recently installed the steam steamer on the lake steamship Senator.) To adapt her in the matter of draught for the varying conditions to be met with in getting to her inland destination and in her subsequent service, she is fitted throughout with a cellular double bottom for water-ballast, her intended draft at sea being 5 ft. 6 in., and on the rivers through which she must pass only 3 ft. The vessel will proceed via Bergen, Vardoe, North Cape, and the Kara Sea to the Yenesei, and thence up the Angara and over the rapids to Lake Baikal, her cargo consisting of coal, water-ballast and provisions.

INLAND LLOYDS SUPPLEMENT.

Manager Daniel McLeod, of the Inland Lloyds Register, enrolled during July seven new steamships and one barge, measuring 23,865 tons net, and valued at \$1,605,000. These are the Appomattox, \$140,000; Sir Henry

Bessemer, \$240,000; Lagonda, \$215,000; Frank Rockefeller, \$160,000; Senator, \$240,000; Queen City, \$250,000; Barge 137, \$120,000. Changes in the book include the steamers Fayette, which now rates A2 at \$12,000; H. C. Schnoor, B1, \$6,000; Rhoda Stewart, B1, \$9,000; tug Wisconsin (rebuilt), A1½, \$10,000; schooners Elgin, \$3,000, B1*; F. C. Leighton, \$6,000, A2; West Side, \$4,300, A2; and H. C. Winglow, \$2,500, B1*; barges D. P. Dobbins, \$10,000; J. J. Dunford, \$3,000, B1; Fostoria, \$1,200, B1½; Magnet, \$4,000, A2; Senator, \$3,500, A2½. The rebuild of the schooner J. W. Hutchinson at Marine City, brought up her valuation from \$10,000 to \$25,000, and her rating from B1 to A2.

ELECTRICITY FOR DRAWBRIDGES.

The new highway bridge across the Connecticut River, connecting Middletown with Portland, Conn., is now swung by electricity. The electrical equipment consists of four motors. Two of these are connected with the swinging mechanism, one working and the other being held in reserve. Of the other two, one is located under each end of the turning span, to raise it from the fixed piers before the third motor begins to swing it. The bridge span is 450 feet long—the longest single-span highway bridge in the world. Previous to the installation of this electrical equipment fifteen men were required to start the bridge and eight men to swing it.

NOTES.

The Manchester Ship Canal traffic using the canal last month was 148,207 tons and the receipts £14,773, against 106,874 tons, and £12,429 in June last year. For the six months the traffic was 823,079 tons, and the receipts £78,564, or an increase of 222,979 tons and £15,954 over the corresponding period of last year.

In the month of June this year 580 steamers, the aggregate net register tonnage of which was 105,940, and 1,044 sailing vessels measuring 40,414 tons net, or altogether 1,624 ships and 146,354 tons, passed through the North Sea and Baltic canal. The dues paid amounted to 82,088 m. 40 pf. or a little over \$20,000. This is a slight improvement on the previous month.

The great shipbuilding yards of Harland & Wolff, Belfast, Ire., were the scene of an extensive conflagration on July 27. The fire began early in the morning in the engine-fitting department, and soon communicated to the buildings in the shipyard of Workman, Clark & Co., adjoining. The buildings in both yards, which were nearly all huge wooden structures, were destroyed. An immense quantity of valuable machinery belonging to vessels now finishing at the yards was ruined, as were also the tools and machinery belonging to the various shops. A conservative estimate places the loss at \$1,250,000.

American Steel Barge Company, West Superior, Wis., Oct. 31, 1895.

The Roberts Safety Water Tube Boiler Co., 39 and 41 Cortlandt street, New York.

Gentlemen: Replying to yours of the 28th I am glad to say that the boiler you furnished us for our tug Islay is giving entire satisfaction. I have heard no complaint about it whatever but have heard a great deal in its favor. I ride on the boat frequently and must say that I am much pleased with its work.

ALEXANDER McDougall,
General Manager.

The Sandusky Register has presented its readers with a very handsome illustrated souvenir and industrial edition. It is partly historical in character, but shows up in a complete and attractive manner, the leading attractions and industries of the city, whose importance in marine commerce is steadily and rapidly growing.

NEWLY ENROLLED TONNAGE.

Following is a list of lake vessels to which official numbers and signal letters have been assigned by the Commissioner of Navigation, for the week ending July 25:

Official No.	Rig.	Name.	TONNAGE.		Where Built	Home Port
			Gross.	Net.		
92,736	St. s.	Maricopa	4 228.57	3,668.5	Chicago	Cleveland
34,254	Bge.	CSC Co No. 12	164.09	164.09	Elizabethport	Cleveland
34,255	Bge.	CSC Co No. 14	163.68	163.68	"	N. J. Cleveland

TRADE AND INDUSTRIAL NOTES.

The Lunkenheimer Co., Cincinnati, have issued their 1896 pocket edition catalogue. It is one of the neatest and handiest catalogues we have received. It contains cuts and descriptions of their very extensive line of the brass and iron goods which they manufacture, such as valves, lubricators, oil and grease cups, gauge glasses and cocks, oil feeders, gauges and pumps, safety valves, whistles, etc. It will be sent free to any address.

The Buffalo Forge Co., Buffalo, have issued their annual circular of Buffalo disk wheels for exhausting, ventilating and cooling. They build these wheels to be run either by belt or direct connected engines or electric motors. The circular shows the application of the wheel to a variety of industries. It can be obtained for the asking.

The Garlock Packing Co., of Palmyra, N. Y., and Rome, Ga., have closed their office at Omaha, Neb., and opened a new office and salesroom at 1713 Wazee street, Denver, Col. Mr. Chas. B. Whitman, who is manager of the same, is well and favorably known by the trade, and needs no introduction. The principal salesrooms of the company are at New York, Chicago, Philadelphia, Denver, St. Louis, Pittsburgh and Boston. The Garlock Packing Co. are manufacturers of high grade packing for steam water, gas ammonia, etc. They manufacture water-proof hydraulic packing, also high pressure packing, which is especially adapted for high pressure work on locomotives, stationary and marine engines, and is designed to insure long service. Samples, catalogue and prices will be mailed on application to any of their offices.

THE LIBRARY TABLE.

The North American Review for August contains two very important contributions from Senator W. E. Chandler and Hon. Josiah Quincy upon the "Issues and Prospects of the Campaign." Timely and interesting reminiscences are given by Hon. George W. Julian, in "Some Anti-Bellum Politics." Mr. George H. Lepper propounds a theory of "National Bimetallism." Another valuable article treats of "The Canadian Elections and Their Results," by J. W. Russell, editor of a leading religious weekly. Hon. Robert P. Porter very pertinently asks "Is Japanese Competition a Myth," and demonstrates very clearly its reality. Grant Allen, under "Novels Without a Purpose" contends with much force that the greatest works of fiction have been animated by a distinct purpose, but omits to apologize for some of the stuff he has managed to have printed.

St. Nicholas for August has an interesting illustrated article called "The Tricks of the Torpedo Boats," by Ernest Ingersoll. "Tricksy sprites" he calls them, too, in their latest stage of development.

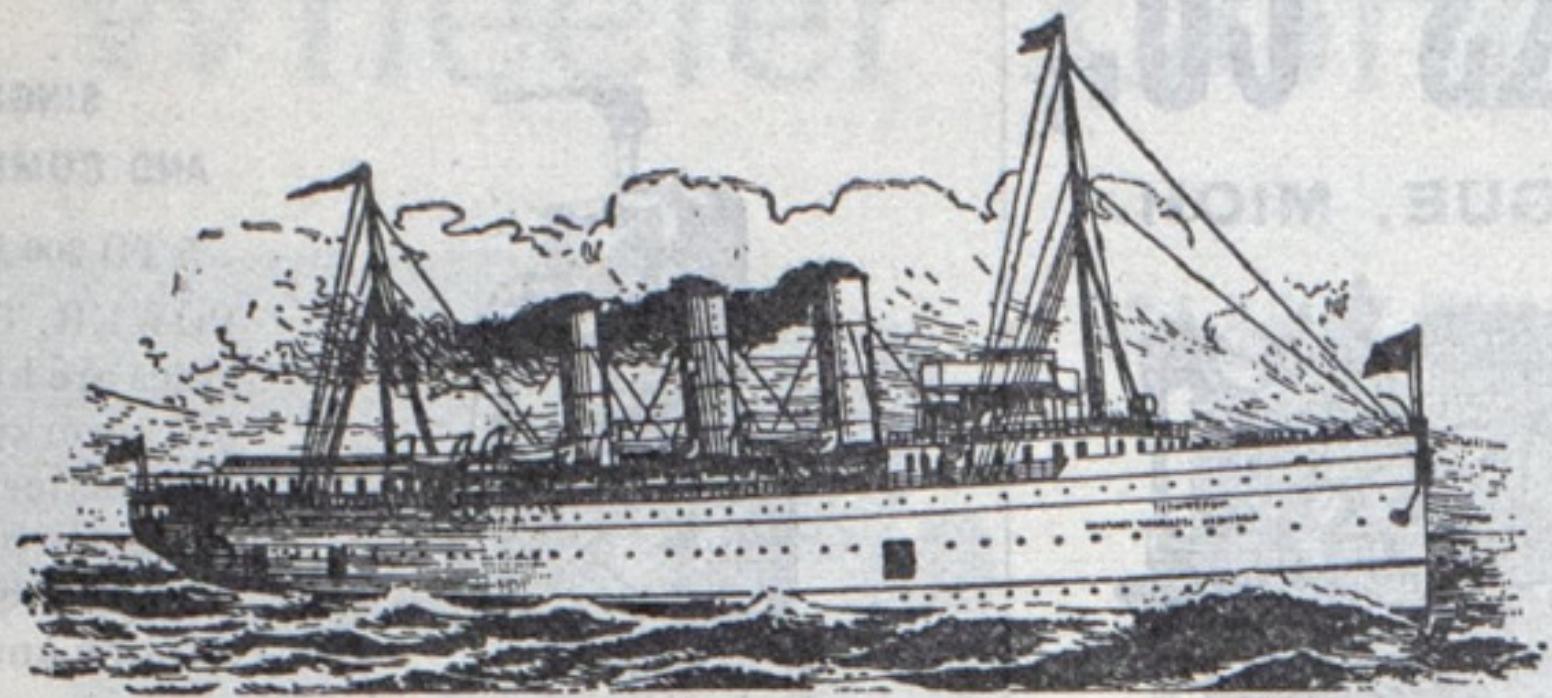
VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, August 1, 1896:

CITIES WHERE STORED.	WHEAT Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Albany	20,000	50,000	5,000	.....	.....
Baltimore	1,231,000	502,000	505,000	26,000	.....
Boston	1,009,000	231,000	260,000	.....	.....
Buffalo	1,438,000	287,000	273,000	143,000	217,000
" afloat	.....	.....	.....	.....	.....
Chicago	13,767,000	5,514,000	1,436,000	322,000	11,000
" afloat	.....	.....	.....	.....	.....
Cincinnati	7,000	2,000	14,000	2,000	.....
Detroit	248,000	6,000	3,000	29,000	.....
" afloat	.....	.....	.....	.....	.....
Duluth and Superior	6,801,000	14,000	330,000	249,000	72,000
" afloat	.....	.....	.....	.....	.....
Indianapolis	433,000	90,000	2,000	.....	.....
Kansas City	937,000	28,000	7,000	5,000	.....
Milwaukee	379,000	1,000	22,000	363,000	25,000
" afloat	.....	.....	.....	.....	.....
Minneapolis	14,500,000	19,000	111,000	67,000	13,000
Montreal	275,000	36,000	286,000	6,000	44,000
New York	1,514,000	382,000	1,631,900	22,000	48,000
" afloat	96,000	8,000	120,000	.....	.....
Oswego	67,000	55,000	.....	.....	49,000
Peoria	122,000	15,000	92,000	4,000	.....
Philadelphia	485,000	247,000	77,000	.....	.....
St. Louis	13,760,000	513,000	59,000	5,000	.....
" afloat	115,000	45,000	.....	.....	.....
Toledo	562,000	50,000	2,000	77,000	.....
" afloat	.....	.....	.....	.....	.....
Toronto	141,000	.....	70,000	.....	22,000
On Canal	488,000	282,000	826,000	197,000	40,000
On Lakes	768,000	2,078,000	932,000	74,000	177,000
On Mississippi	90,000	307,900	13,000	.....	.....
Canal Total	46,734,000	10,752,000	7,166,000	1,598,900	718,000
Corresponding date 1895	38,517,000	4,664,000	3,755,000	194,000	28,000

The life saving station at Plum Island is in commission.

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Rapid Fueling Docks,
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No interference from Passenger or Car Ferry Lines.
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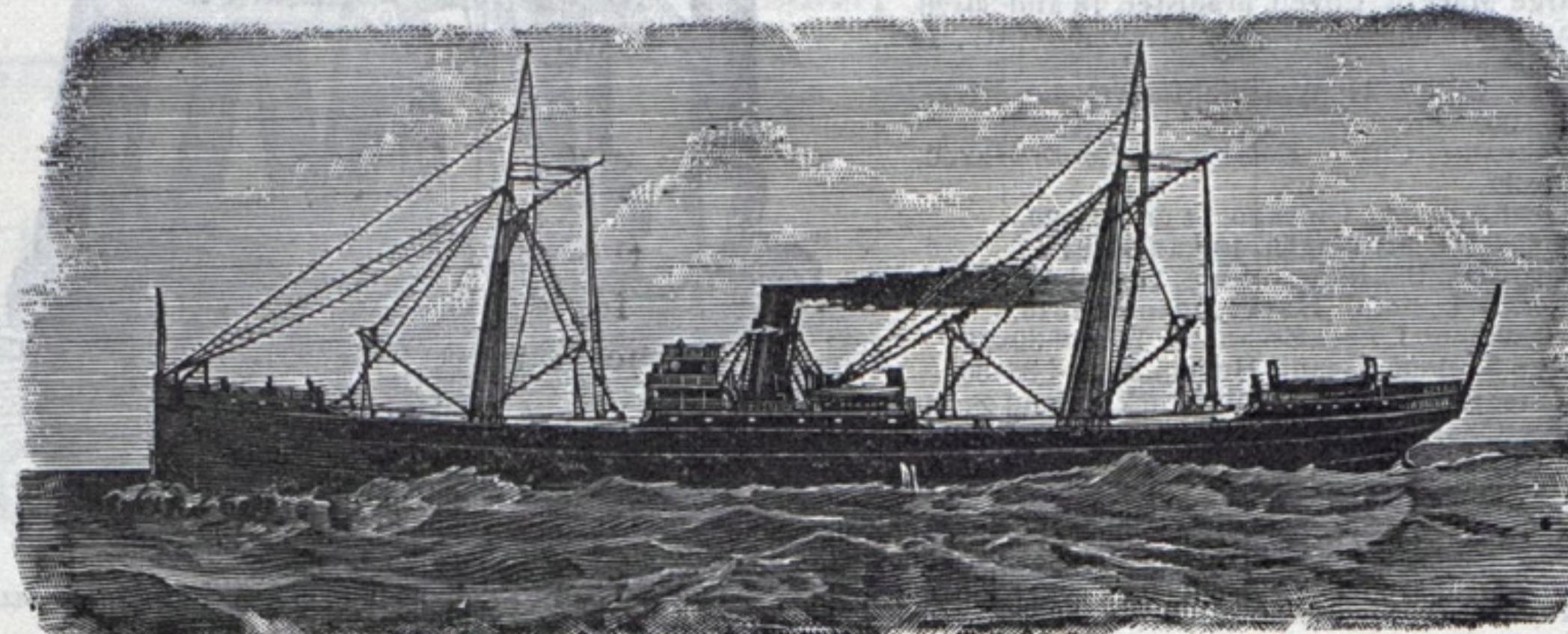
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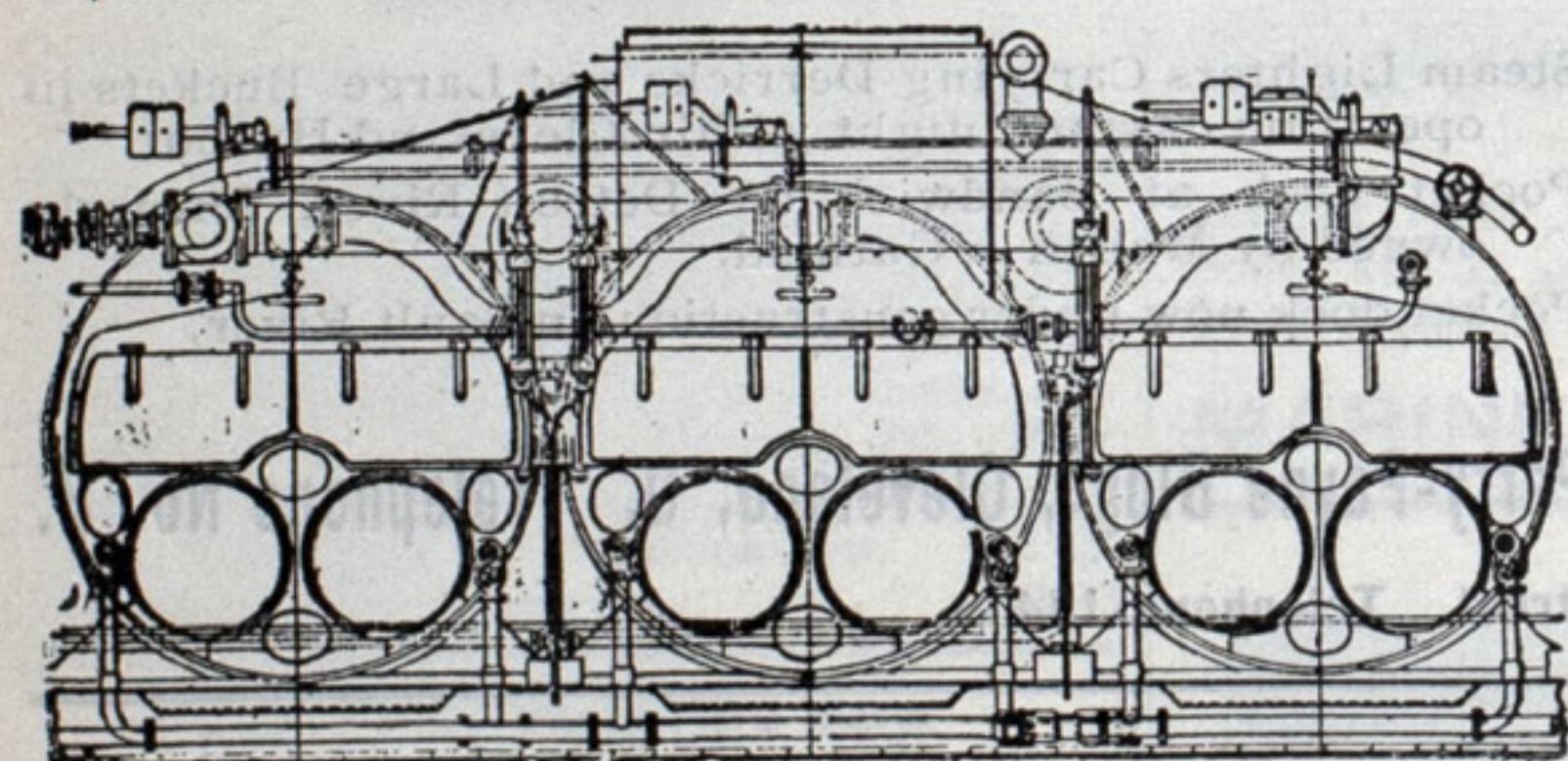
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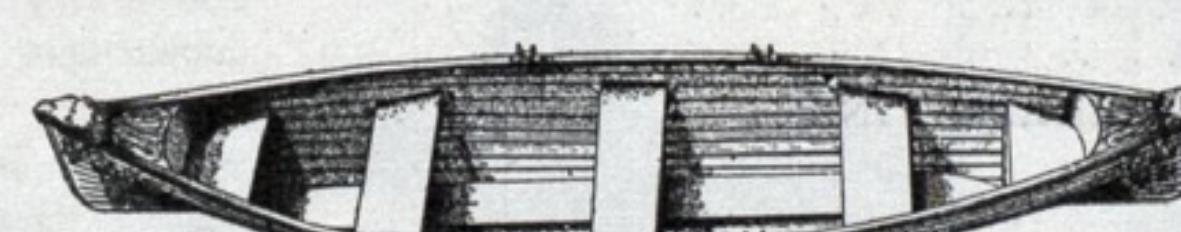
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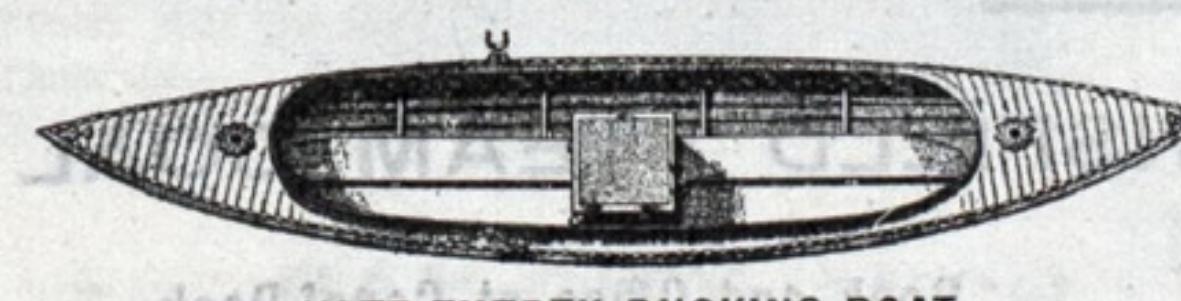
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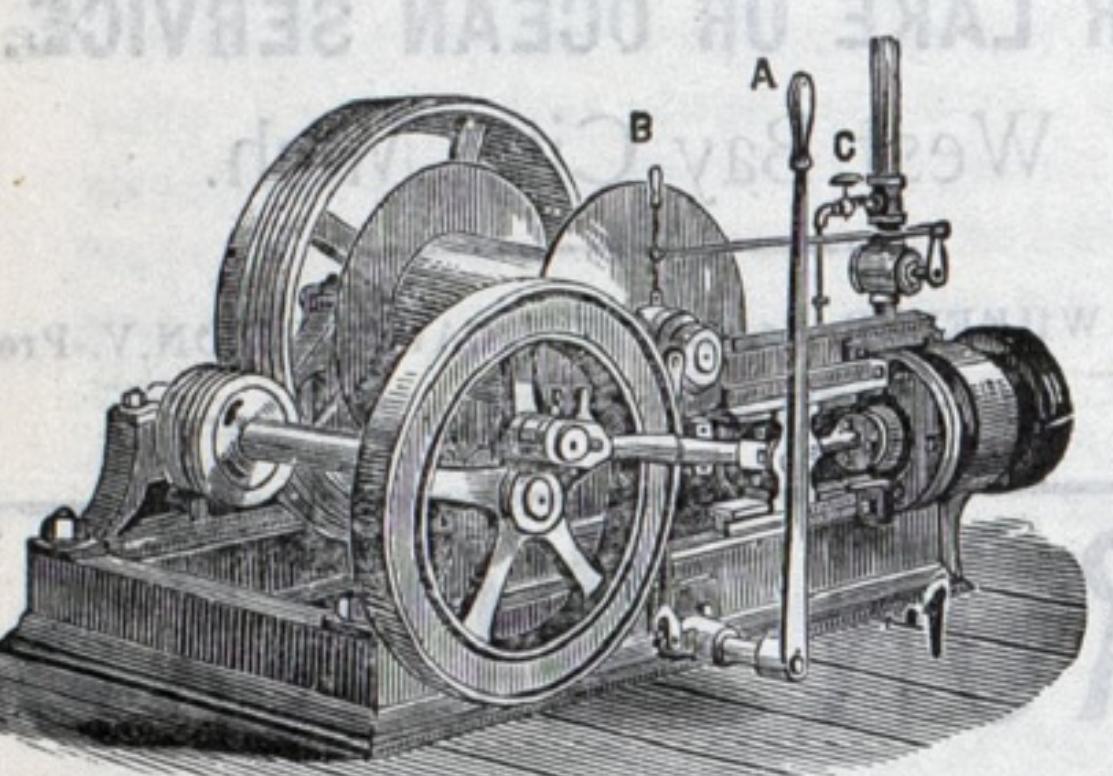
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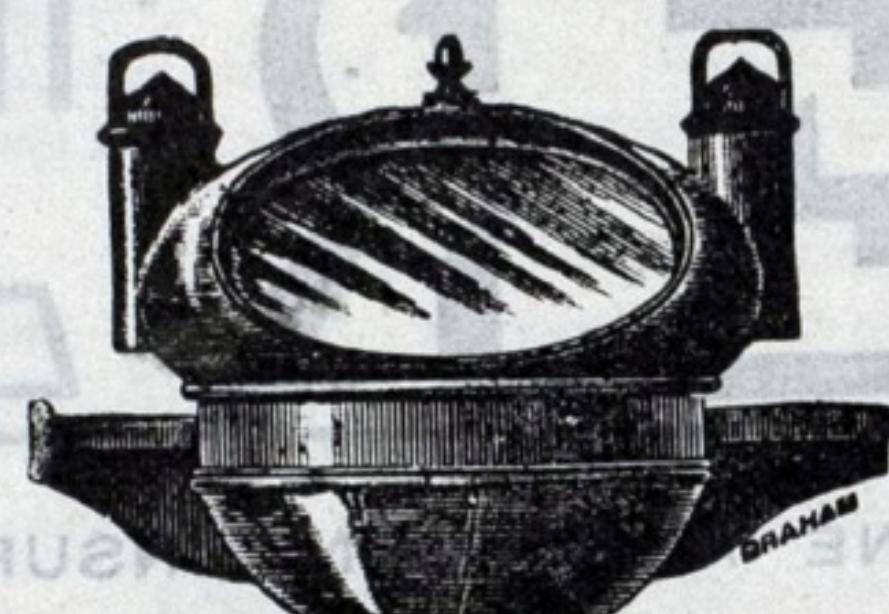
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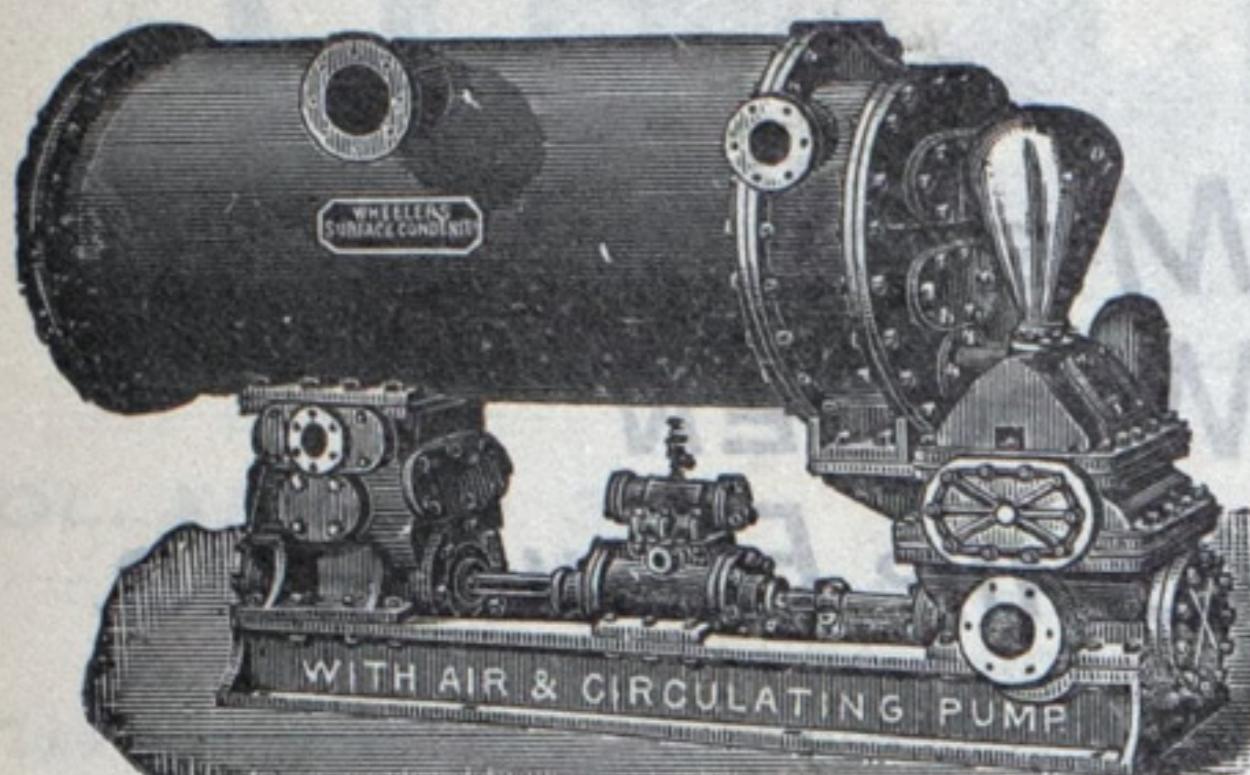


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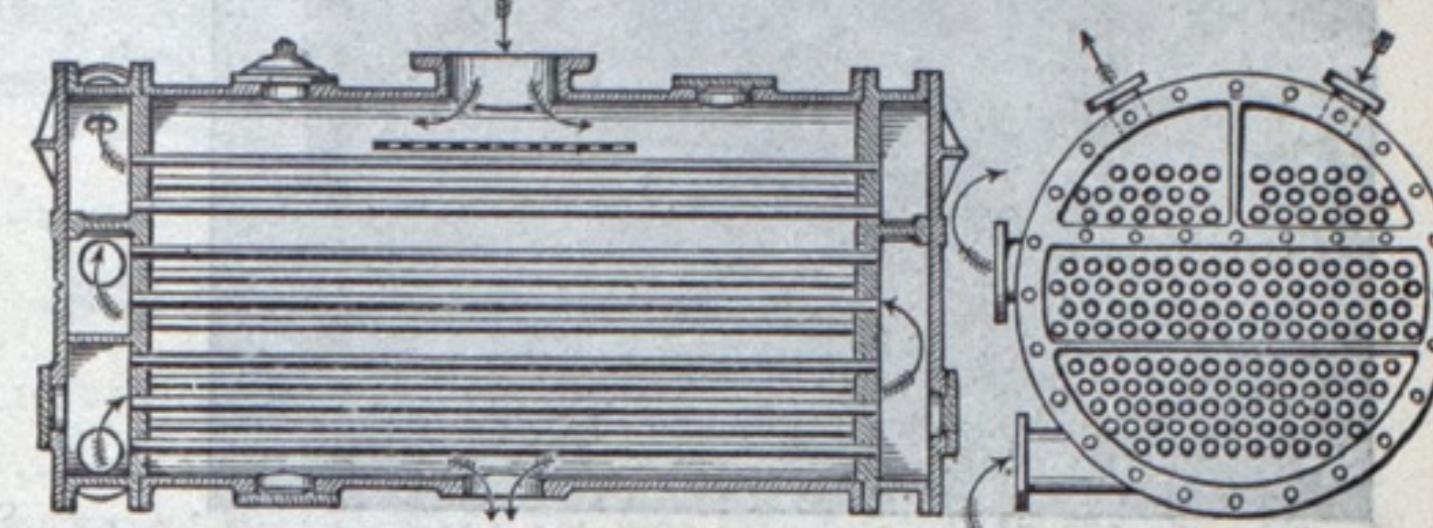
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Satisfaction.....	12x72	18x20	73	58	15	8
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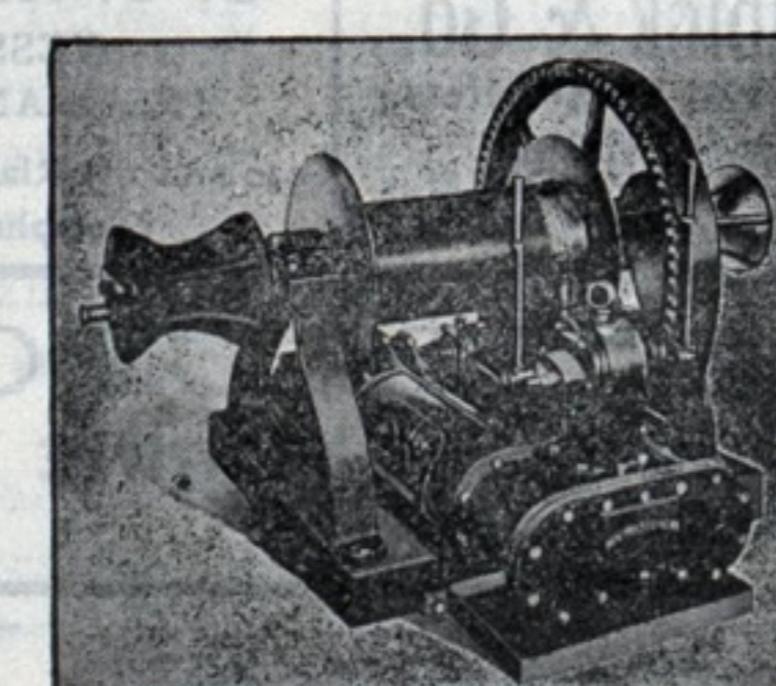
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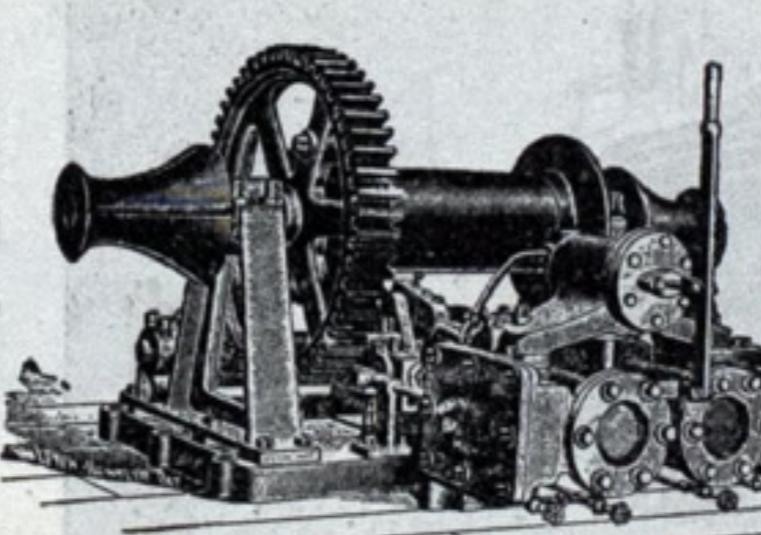
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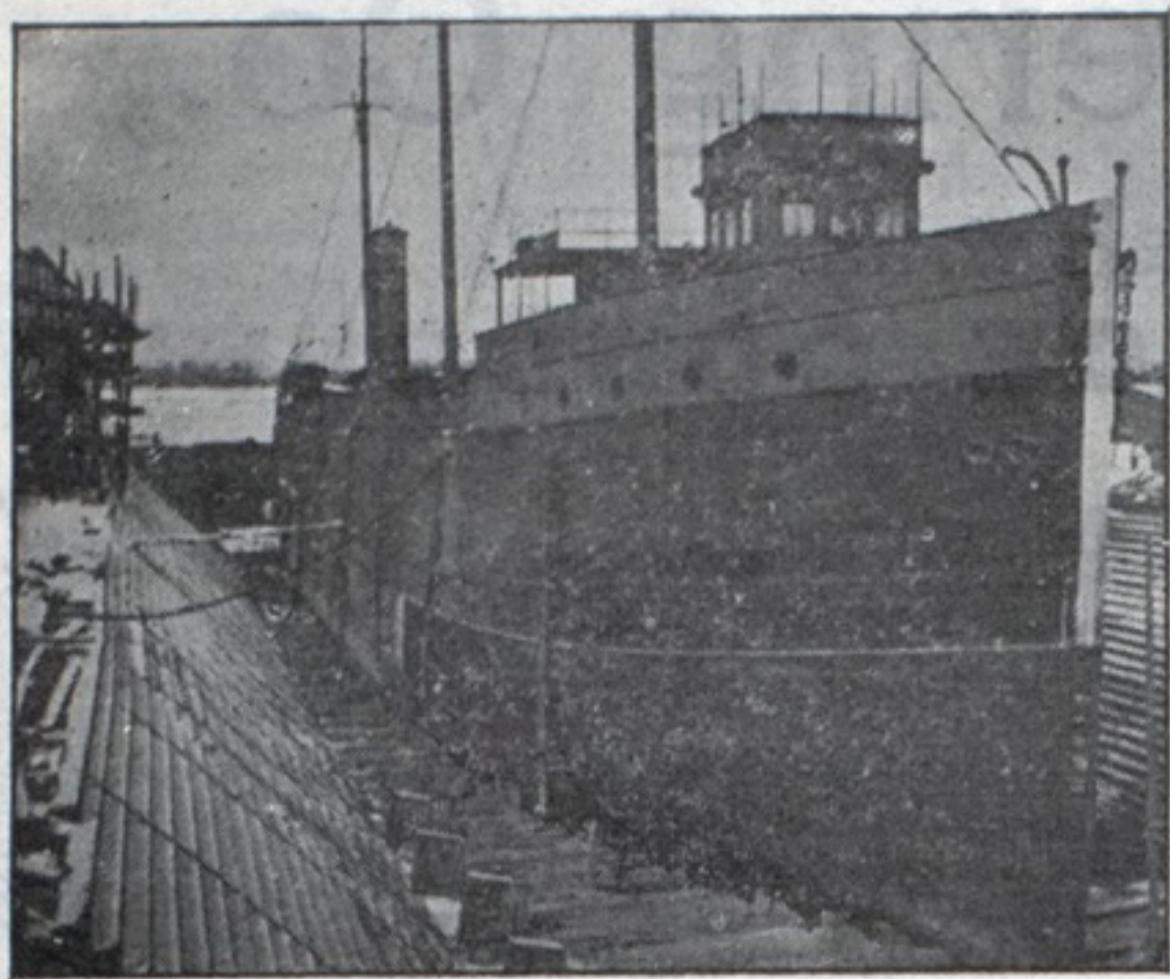
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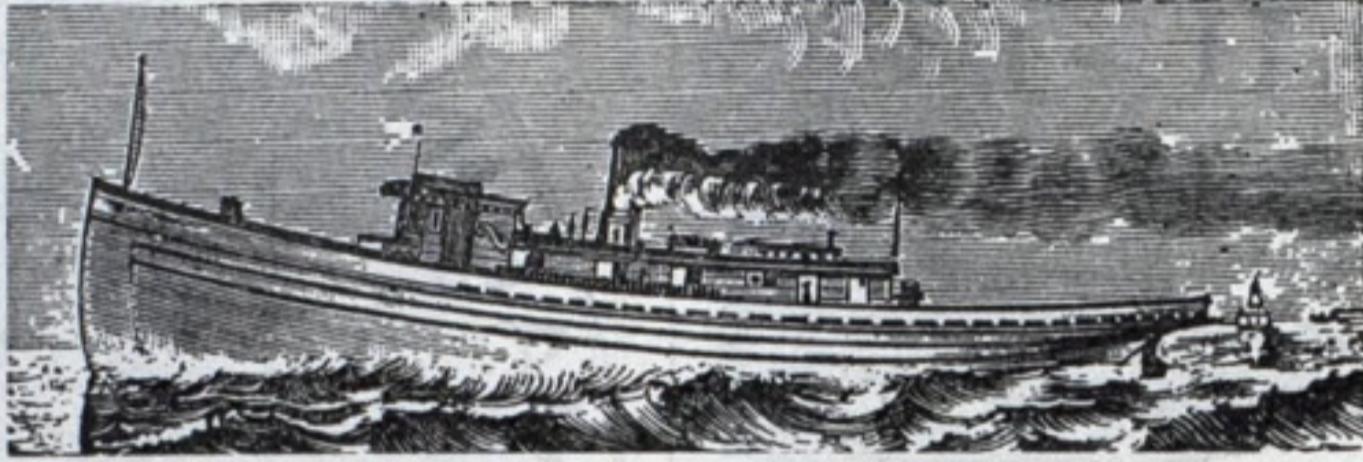
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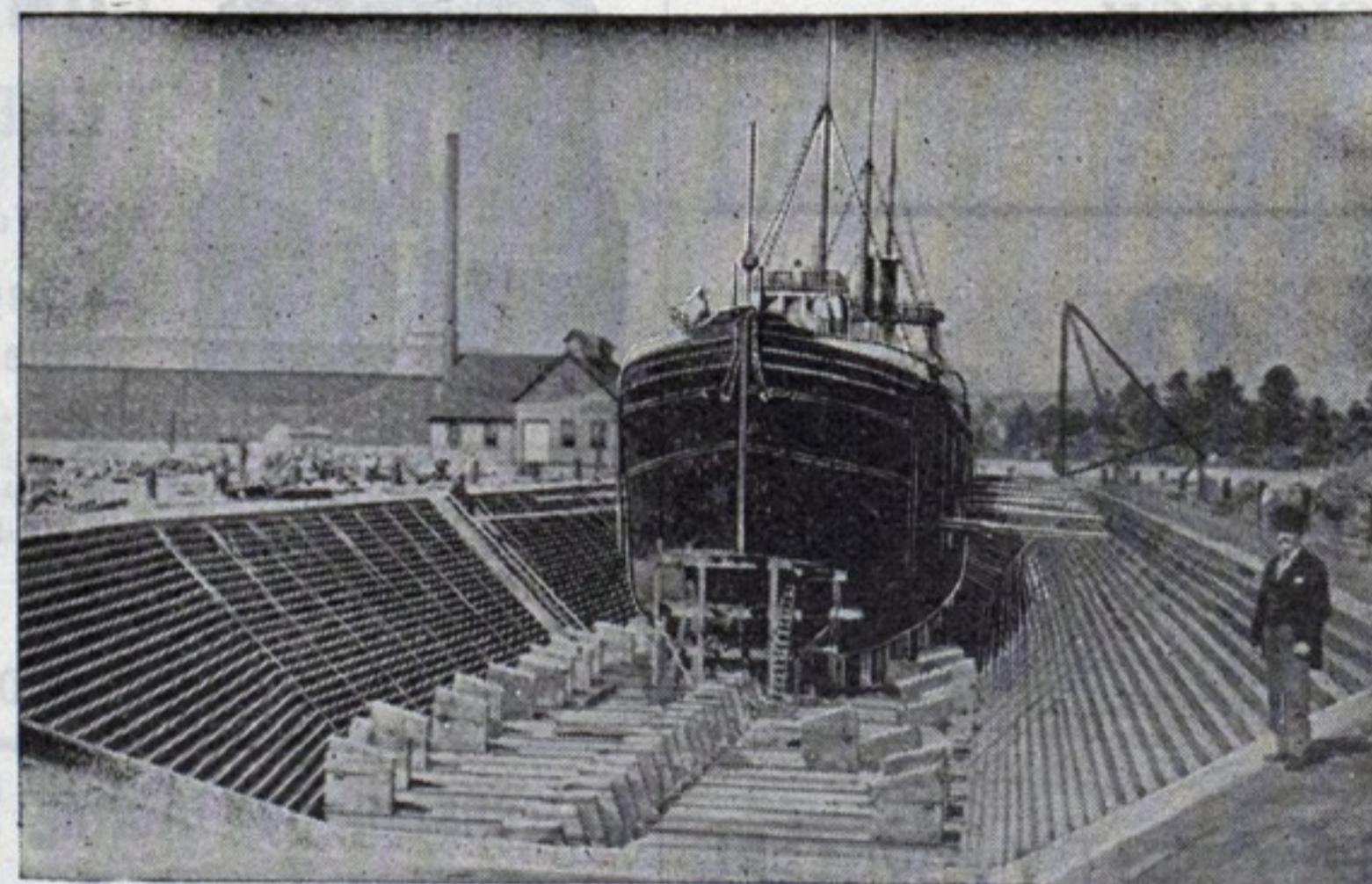
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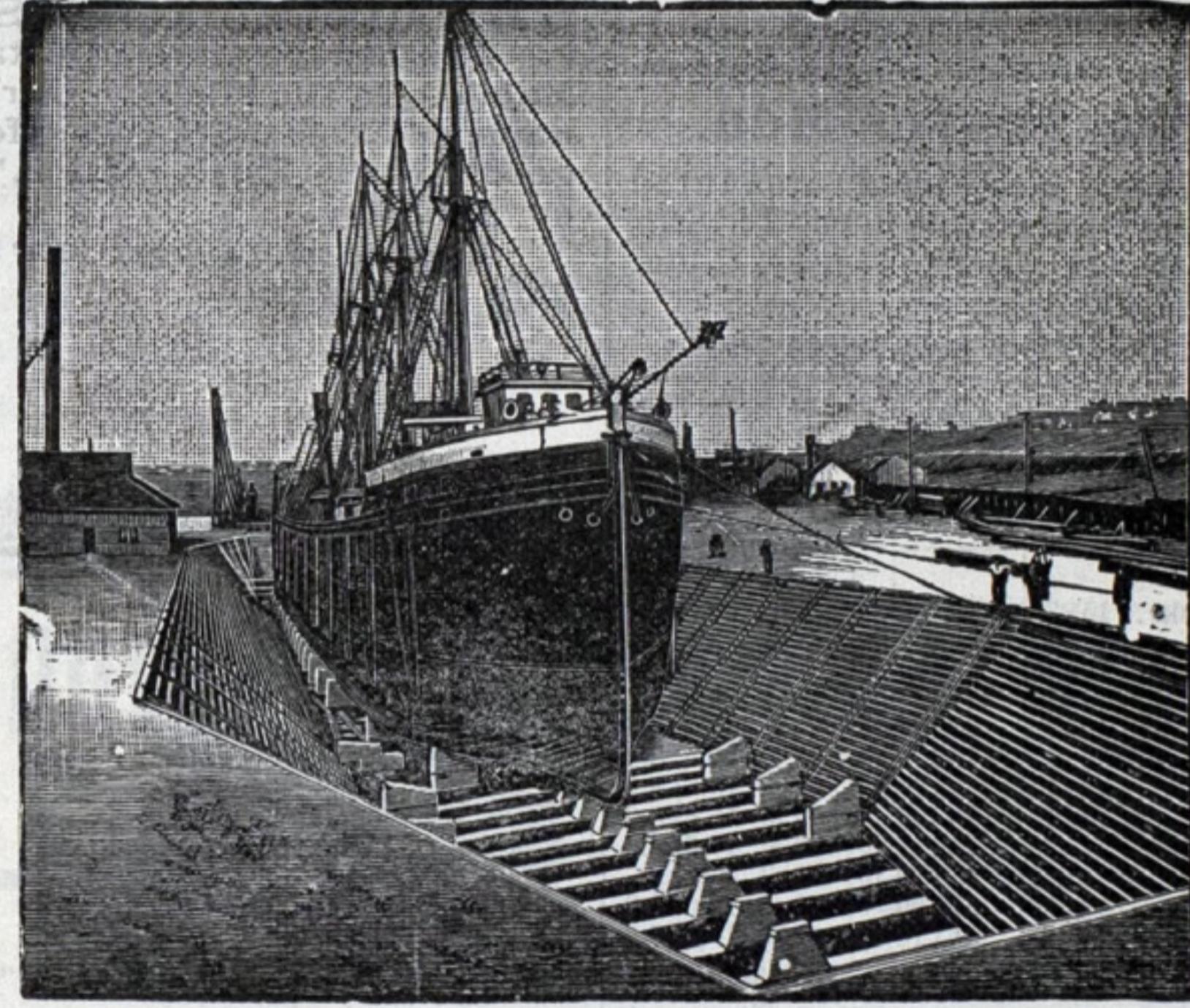
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